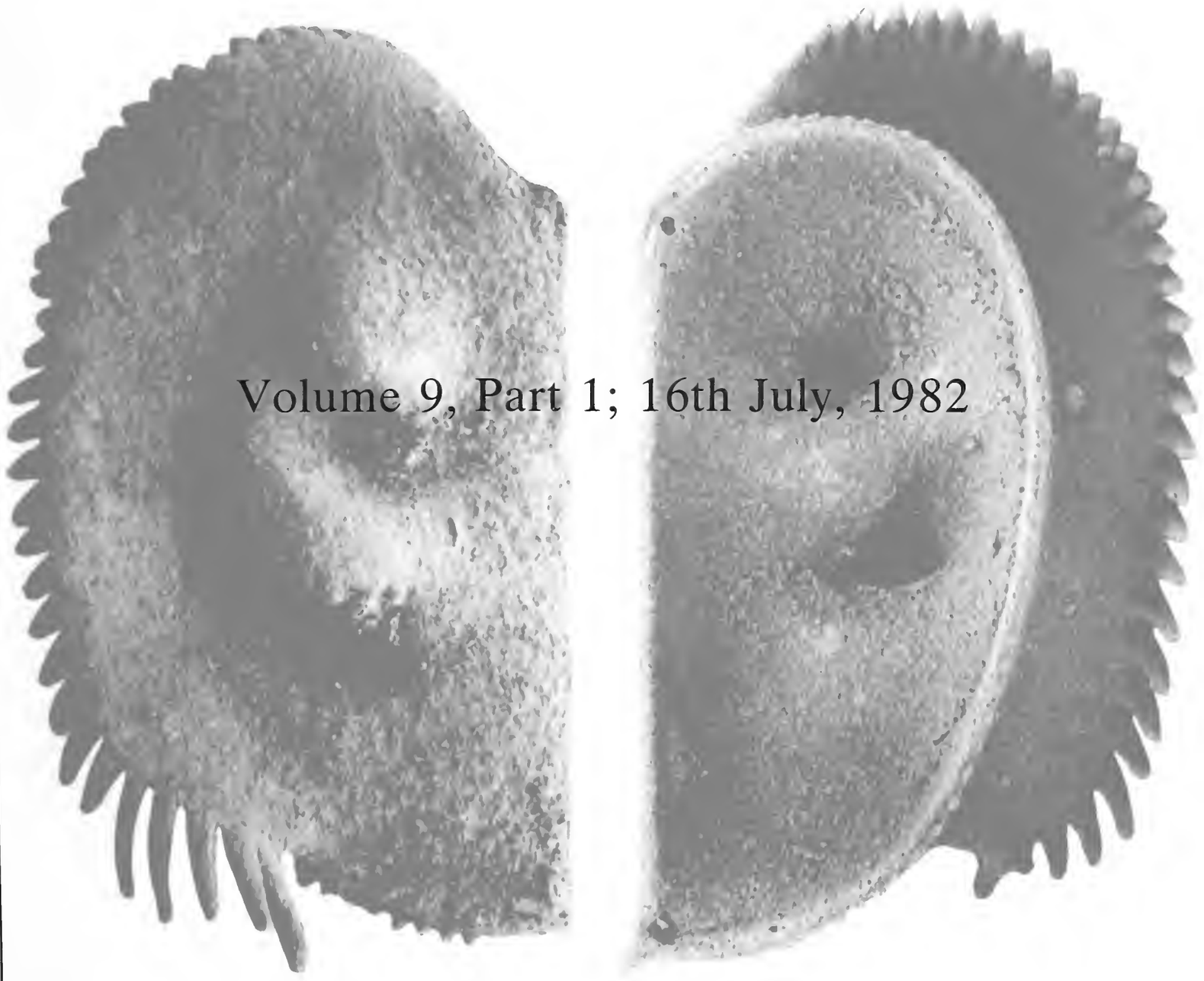
A Stereo-Atlas of Ostracod Shells

edited by R. H. Bate, J. W. Neale, Lesley M. Sheppard
and David J. Siveter



Volume 9, Part 1; 16th July, 1982

Published by the British Micropalaeontological Society

Instructions to Authors

Contributions illustrated by scanning electron micrographs of Ostracoda in stereo-pairs are invited. Format should follow the style set by the majority of papers in this issue. Descriptive matter apart from illustrations should be cut to a minimum; preferably each plate should be accompanied by one page of text only. Blanks to aid in mounting figures for plates may be obtained from any one of the Editors or Editorial Board. Completed papers should be sent to Dr L.M. Sheppard.

The front cover shows a female left valve, external and internal views, of **Bilobatia serralobata** Schallreuter.

Printed by United Printing Services, Blackpool, England.

Stereo-Atlas of Ostracod Shells 9 (1) 1 - 8 **(1982)**
595.336.13 (113.312) (492.71 : 161.008.54) : 551.35 + 552.55

ON *BRADERUPIA ASYMMETRICA* (NECKAJA)

by Roger E. L. Schallreuter
(University of Hamburg, German Federal Republic)

Genus *Braderupia* gen. nov.
Type-species: *Pseudostrepula asymmetrica* Neckaja, 1958.

Derivation of name: Braderup, the locality of the figured specimens. Gender feminine.

Diagnosis: Small to medium-sized palaeocope. Unisulcate; S2 moderately long. Asymmetrical: right valve has a distinct spine-like posteroventral lobe; in left valve it is absent or occurs (especially in females) only as a weak inflation. Velum in males and larger tecnomorphs is a rounded ridge, in females it forms a flange-like dolon, and is absent in young instars. Velar antrum admarginal, occurs antero- and centroventrally. Histium developed only in anteroventral and posteroventral regions, forms a more or less distinct, rounded ridge, and is only slightly dimorphic (weaker posteroventrally in males); histial antrum absent. Histiovelar furrow fissum-like anteriorly, posteriorly has a v-shaped profile and irregular row of puncta, continued posteriorly as an indistinct semisulcus. Laterohistial furrow anteriorly forms a distinct fissum parallel to histiovelar fissum-like furrow, posteriorly forms a more or less distinct u-shaped furrow or is absent. Marginal sculpture is a ridge or row of spines.

Explanation of Plate 9, 2

Figs. 1, 2, ♀ LV (**GPIMH 2472,** 880 μm long): fig. 1, ext. lat.; fig. 2, ext. vent. obl.
Scale A (100 μm; x 110), figs. 1, 2.

Remarks: *B. asymmetrica* was formerly questionally placed within the ctenonotellid genus *Pseudostrepula* (Schallreuter, *Palaeontographica* (A) **153** (4/6), 194, 1976; V. A. Ivanova, *Trudy Paleont. Inst.*, **172,** 158, 1979), but because of the confirmed presence of a histium the species is here assigned to the Tetradellidae. *B. asymmetrica* is a sigmoopsine because it has a dimorphic histium which, moreover, is also present anteroventrally and anterocentrally as, for example, in *Sigmoopsis* (see below).

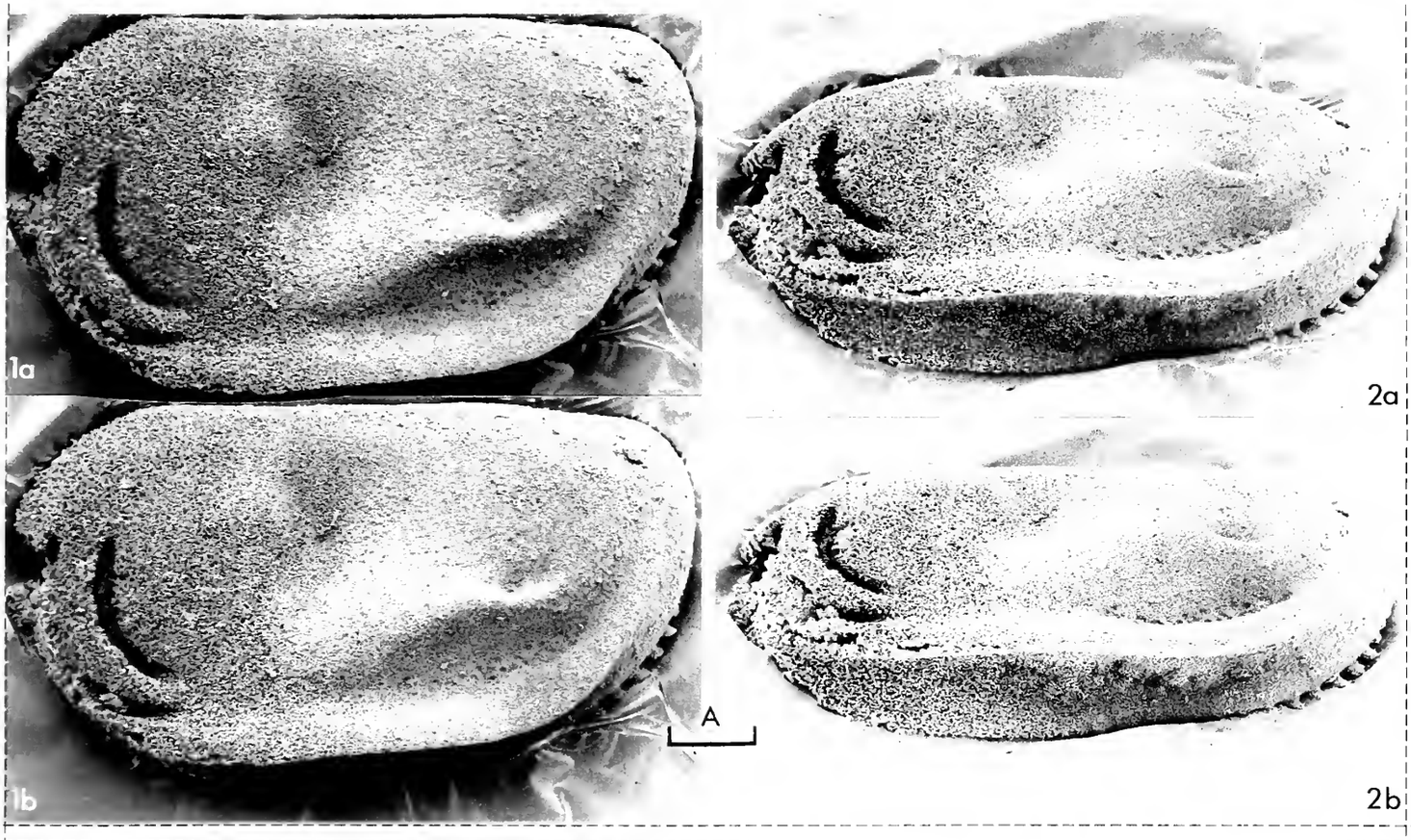
The only other unisulcate sigmoopsine genera are *Severobolbina* Schallreuter *(Geol. För. Stockh. Förh.* **96** (3 = 558), 278, 1974) and *Valdarella* Qvale *(Norsk Geol. Tidsskr.*, **60** (2), 102, (1980). In contrast to *Braderupia*, in *Severobolbina* the histium is also present centroventrally in females (where it is confluent with the velar dolon) but is missing in males and in the anterior regions of both dimorphs. Thus, *Braderupia* represents a different phylogenetic line leading to unisulcate members of the Sigmoopsinae and descends presumably from *Sigmoopsis*-like forms in which the histium is also present anteriorly as, for example, in *S. rostrata* (Krause) (Schallreuter, *Geologie* **15** (7), pl. 4 (p.873), fig. 4, pl. 5 (p.875), fig. 5). A third lineage is represented by *Valdarella*, which may have descended from *Kiesowia (Carinobolbina)*-like forms.

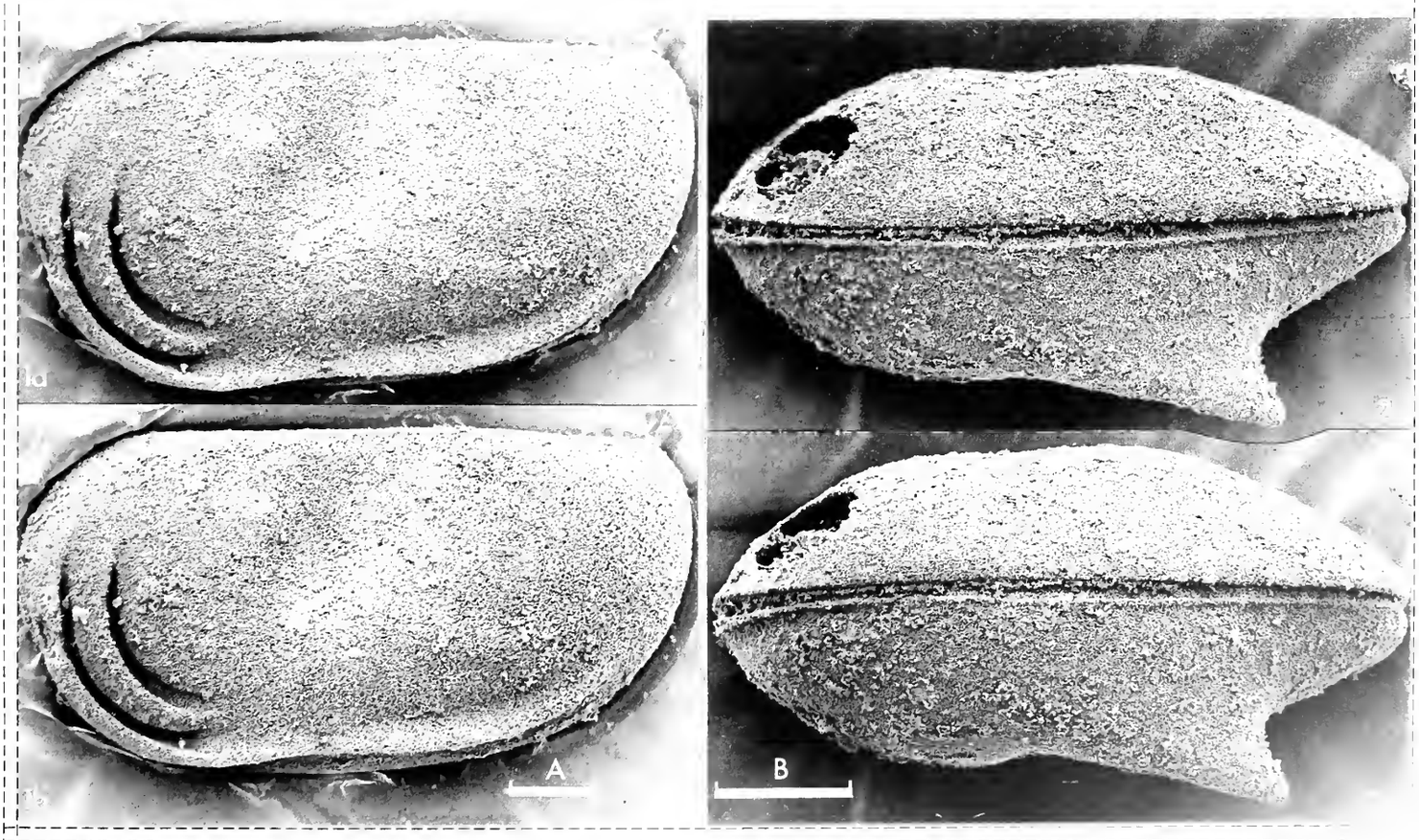
Valdarella resembles *Braderupia* by having histial and velar ridges parallel to each other and to the anteroventral margin in the females, but differs by the absence of a histium and velum in tecnomorphs and in the development of these sculptures in the anterior centroventral region of the females.

Ullerella ventroplicata Henningsmoen *(Norsk. Geol. Tiddsskr.* **32** (1), 47, 1953) resembles *Braderupia asymmetrica* in certain respects but is not placed within the new genus because of the presence of a ridge in front of the velum in the anterior part of the valve (Henningsmoen, loc. cit., text-fig. 1 lower).

Explanation of Plate 9, 4

Fig. 1, ♂ LV, ext. lat. (**GPIMH 2473,** 820 μm long); fig. 2, juv. car., ext. vent. (**GPIMH 2474,** 510 μm long).
Scale A (100 μm; x 117), fig. 1; scale B (100 μm; x 192), fig. 2.


1a
1b
A
2a
2b


A
B

Braderupia asymmetrica (Neckaja, 1958)

1958 *Pseudostrepula asymmetrica* sp.n. A. I. Neckaja, *Trudy vses. neft. nauchno-issled. geol.-razv. Inst. (VNIGRI)* **115** (= *Mikrofauna SSSR* **9**), 352, 353, pl. 1, figs. 8, 9.
1959 *Pseudostrepula asymmetrica* Neckaja; L. I. Sarv, *Eesti NSV Tead.Akad. Geol. inst. uurimused* **4,** 96-98, 193, tab. 2 (187), pl. 16, figs. 11-16, text-fig. 10G.
1960 *Pseudostrepula asymmetrica* Neckaja; L. I. Sarv, *Ibid.* **5,** tab. 1.
1970 *Pseudostrepula asymmetrica* Neckaja; A. Rõõmusoks, *Stratigrafija viruskoj i char'juskoj serij (ordovik) Severnoj Estonii* **I,** 216, 236, 267, 268, 289, 291, tabs. 12, 13, 15 (220, 246, 296).
1971 *Pseudostrepula asymmetrica;* R. E. L. Schallreuter, *Neus Jb. Geol. Paläont.,* **1971** (4), 250.
1971 *Pseudostrepula asymmetrica* Neckaja; R. E. L. Schallreuter, *Ibid.,* **1971** (11), 691.
1973 *Pseudostrepula* (resp. *Psuedostepula) asymmetrica* Neckaja; A. I. Neckaja, *Trudy VNIGRI* **324,** 65, 66.
1973 *Pseudostrepula asymmetrica* Neck.; L. K. Gailīte, *Problemy regionalnoj geologii Pribaltiki i Belorussii,* 67, tab. 2 (68).
1976 *Pseudostrepula ? asymmetrica* Neckaja; R. E. L. Schallreuter, *Palaeontographica* (A) **153** (4/6), 194, 198.
1976 *Pseudostrepula asymmetrica* Neckaja; N. Sidaravičiene, *Sovet. geol.* **1976** (8), 54, tab. 1 (50).
1976 *Pseudostrepula asymmetrica* (Neckaja); V. Jaanusson, *The Ordovician System* (Proc. Palaeont. Assoc. symp. Birmingham Sept. 1974; Ed. M. G. Bassett), text-figs. 10, 11 (faunal logs).
1979 *Pseudostrepula asymmetrica* Neckaja; N. Sidaravičiene, *Eesti NSV Tead. Akad. Toimetised (Geol),* **28** (4), 133, text-figs. 2, 3, 4 (faunal logs).
1979 ? *Pseudostrepula asymmetrica* (& *asimmetrica)* Neckaja; V. A. Ivanova, *Trudy paleont. Inst.,* **172,** 158, 159, 191, pl. 13, fig. 3.
1980 *Pseudostrepula asymmetrica* Neckaja; N. Sidaravičiene, *Eesti NSV Tead. Akad. Toimetised (Geol.),* **29** (4), text-fig. 1 (faunal log).

Explanation of Plate 9, 6

Figs. 1, 2, ♀ RV (**GPIMH 2475,** 870 μm long): fig. 1, ext. lat., fig. 2, ext. vent. obl.
Scale A (100 μm; x 109), figs. 1, 2.

Holotype: Vsesojuznyj neftjanoj naučno-issledovatel'skij geologorazvedočnyj institut (VNIGRI) Leningrad, no. **3-128,** ♀ RV.

Type locality: Raion Bolšie Korčany, Leningrad obl., Russia; lat. 59° 33′ N, long. 29° 2′ E. Viru Series (Middle Ordovician), Gubkov beds = Schundorov Substage of the Idavere Stage ($C_3\beta$).

Figured specimens: Geologisch-Paläontologisches Institut und Museum, University of Hamburg (GPIMH) nos. **2472** (♀ LV: Pl. **9,** 2, figs. 1, 2), **2473** (♂ LV: Pl. **9,** 4, fig. 1), **2474** (juv. car.: Pl. **9,** 4, fig. 2), **2475** (♀ RV: Pl. **9,** 6, figs. 1, 2), **2476** (♂ RV: Pl. **9,** 8, figs. 1, 2). From the Upper Viruan (middle Ordovician) Hornstein erratic boulders no. Sy 52 (**2475**) and no. Sy 108 (**2472, 2473, 2474, 2476**) of the Kaolinsand (Pliocene-Pleistocene), near Braderup, Isle of Sylt (N Frisian Is., N Sea) Germany; lat. 54° 56′ N, long. 8° 21′ E; coll. by Ulrich von Hacht in 1978 and 1980.

Diagnosis: As for genus.

Remarks: In the development of puncta in the histiovelar furrow *B. asymmetrica* resembles *Sigmoopsis (S.) granulata* (Sarv) and *S. (Sigmoopsoides) sigmoopsoides* Schallreuter.

Distribution: NW Russian Platform (Leningrad, Estonia, Latvia, Lithuania): Idavere (C_3), Jõhvi (D_1) and Keila (D_2) stages of the Viru Series, middle Ordovician. Rollsteinkalk (= Macrouruskalk) erratic boulders of Keila age of northern Germany; upper Viruan Hornstein erratic boulders of the Kaolinsand (Pliocene - Pleistocene) of the Isle of Sylt (N Frisian Is., N Sea), Germany.

Explanation of Plate 9, 8

Figs. 1, 2, ♂ RV (**GPIMH 2476,** 790 μm long): fig. 1, ext. lat.; fig. 2, ext. vent. obl.
Scale A (100 μm; x 122), figs. 1, 2.


1a
2a
1b
2b


1a
2a
1b
2b

Stereo-Atlas of Ostracod Shells 9 (2) 9-16 **(1982)**

595.336.13 (113.312) (492.71 : 161.008.54) : 551.35+552.55

ON *BILOBATIA SERRALOBATA* SCHALLREUTER

by Roger E. L. Schallreuter
(University of Hamburg, German Federal Republic)

Genus *Bilobatia* Schallreuter, 1976
Type-species (by original designation): *Bilobatia serralobata* Schallreuter, 1976

Diagnosis: Median-sized palaeocope, adults 1-2mm long; domicilium longer in males than females. A well developed oblong lobe occurs either side the main sulcus (S2), each having a row of short spines posterolaterally. Behind the strongly developed L3 there is a shallow S3 and a flat, indistinct L4. Velum in males represented by a row of spines or possibly as a flange. Female has a broad, convex, flange-like dolon adjacent to a well developed laterovelar furrow; dolon has a row of long peripheral spines more of less perpendicular to the contact plane, thus forming a typical wehrliine antrum. Marginal sculpture formed by a row of spines. Lateral surface more or less distinctly reticulate; dolonal flange striated.

Remarks: *Bilobatia* is characterized by its two distinct lobes and its prominent laterovelar furrow. Its phylogenetic origin is unknown. Presumably it descended from a smaller quadrilobate ancestor with a distinct L2. The stratigraphically older *Pectidolon* is larger, has a strong L1 and a relatively weak L2 and, therefore, could not be its ancestor.

Explanation of Plate 9, 10

Figs. 1, 2, ♀ LV (**GPIMH 2493,** 961μm long excluding posterior spines): fig. 1, ext. lat.; fig. 2, ext. vent. obl.
Scale A (100μm; x 92), figs. 1, 2.

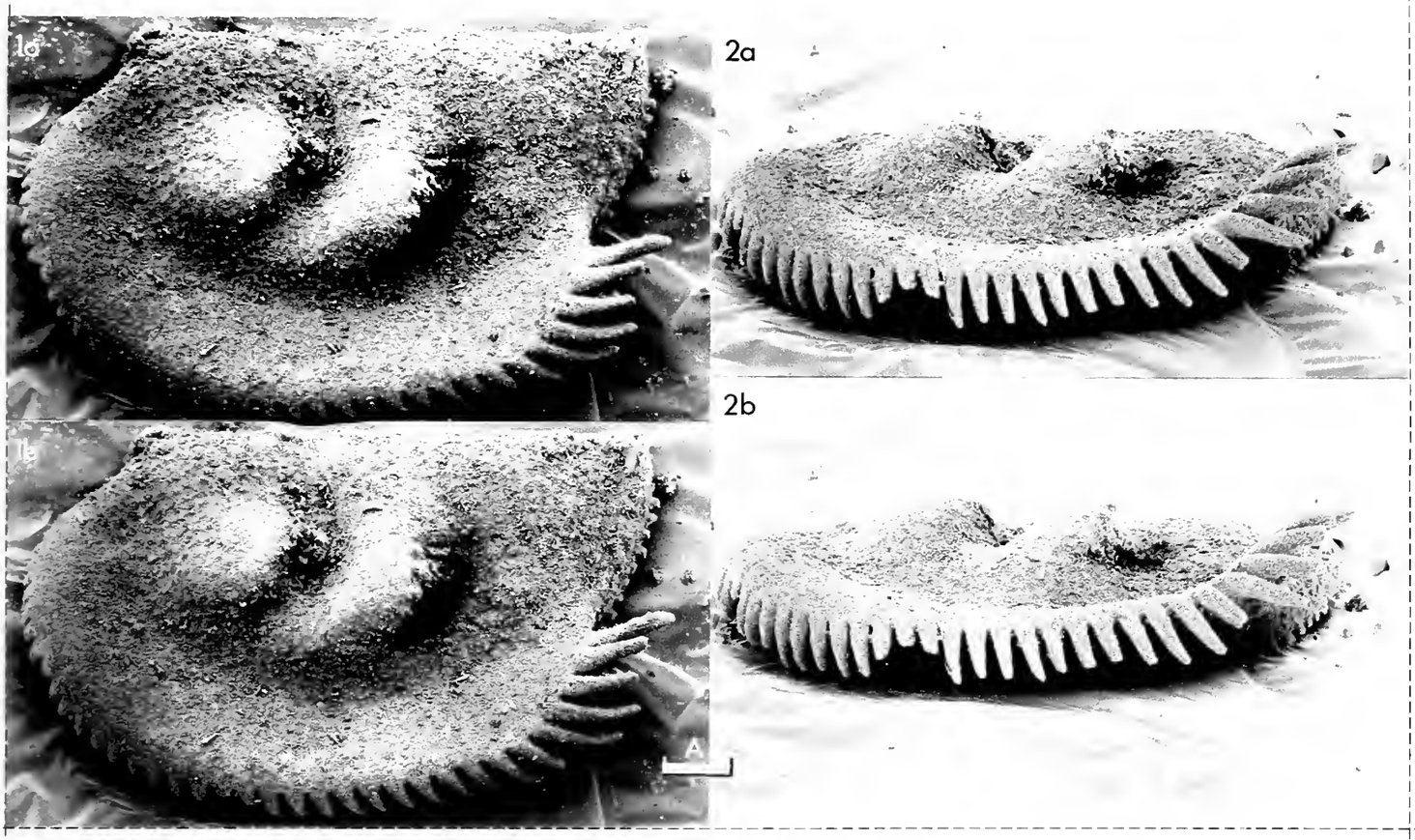
Remarks (contd.): The special type of dolon of *Bilobatia*, with a row of spines forming the outer antral fence, is typical of the wehrliine type of antral dimorphism which was first described by Schallreuter *(Ber. geol. Ges. D.D.R.,* **10** (4), 484, 1965). This special kind of antral dimorphism is confined to the subfamily Wehrliinae and occurs in *Rakverella, Wehrlia, Pectidolon* and *Bilobatia.* Kesling *(Contr. Mus. Paleont. Univ. Mich.,* **12** (13), 1955) first described females of *Rakverella ? bonnemai* Öpik and noted in his description of the "false pouch of female": "Each frill consists of 29 or 30 spines, closely set and apparently fused only along their lines of juncture. . . . The spines composing the false pouch in *Rakverella bonnemai* are not as strongly fused as those in *Piretella acmaea* Öpik" *(op. cit.,* 265-266). The spines do not fuse at all (e.g. Kesling 1955, pl. 1, figs. 1, 2, 5, 6); there is a system of intervening gaps that is characteristic of wehrliine dimorphism. The function of such a special kind of a brood pouch is possibly to act like a cage, to hold the brood or eggs together and at the same time to supply them with fresh water.

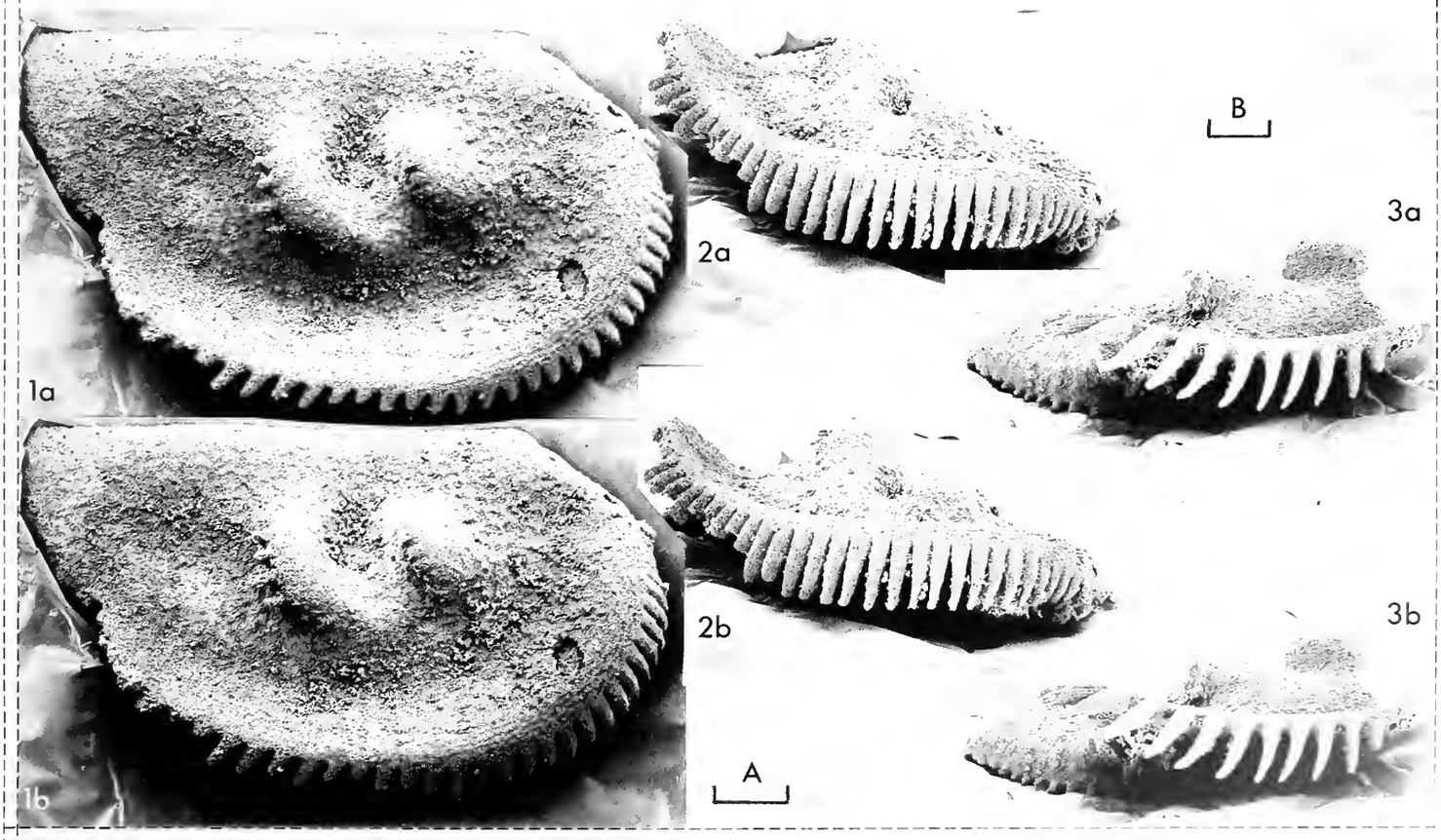
Bilobatia serralobata Schallreuter, 1976

1965 *Ctenonotella bidens* Sarv, 1959; R. E. L. Schallreuter, *Ber. geol. Ges. D.D.R.,* **10** (4), 484.
1976 *Bilobatia serralobata* n. sp. R. E. L. Schallreuter, *Palaeontographica* (A) **153** (4/6), 205-207, pl. 8, figs. 1, 2, text-fig. 14, tab. 12 (q. v. for full synonymy).
? 1976 *Ctenonotella bidens* (Krause); V. Jaanusson, *The Ordovician System* (Proc. Palaeont. Assoc. symp. Birmingham Sept. 1974 Ed. M. G. Bassett), text-fig. 11 (faunal log).
1979 *Ctenonotella bidens* (Krause, 1892); V. A. Ivanova, *Trudy paleont. Inst.* **172,** 141-142(pars), pl. 10, fig. 12 (holotype).

Explanation of Plate 9, 12

Figs. 1, 2, ♀ RV (**GPIMH 2494,** 937μm long): fig. 1, ext. lat.; fig. 2, ext. anterovent. obl.; fig. 3, incomplete ♀ RV, ext. posterovent. obl. (**GPIMH 2495,** 543μm high).
Scale A (100μm; x 97), figs. 1, 2; scale B (100μm; x 85), fig. 3.


1a
2a
2b
1b
A


B
3a
2a
1a
2b
3b
1b
A

Holotype: Geologičeskij musej Akademija nauk Estonskoj SSR Tartu no. **Os 2210,** ♀ RV.

Type locality: Alliku, SW of Tallinn, Estonia; lat. 59° 21′ N, long. 24° 33′ E. Jõhvi Stage (D_1), upper Viruan middle Ordovician).

Figured specimens: Geologisch-Paläontologisches Institut und Museum, University of Hamburg (GPIMH) nos. **2493** (♀ LV: Pl. **9,** 10, figs. 1, 2), **2494** (♀ RV: Pl. **9,** 12, figs. 1, 2), **2495** (♀ RV: Pl. **9,** 12, Fig. 3), **2496** (♂ LV: Pl. **9,** 14, figs. 1, 2), **2497** (♂ LV: Pl. **9,** 16, fig. 1) and **2498** (♂ LV: Pl. **9,** 16, fig. 2). All from the upper Viruan (middle Ordovician) Hornstein erratic boulder no. Sy108 of the Kaolinsand (Pliocene - Pleistocene), near Braderup, Isle of Sylt (N Frisian Is, N Sea), Germany; lat. 54° 56′ N, long. 8° 21′ E; coll. by Ulrich von Hacht in 1980.

Diagnosis: As for the genus.

Remarks: The holotype of *B. serralobata*, a female right valve, is 1.25 mm long according to L. I. Sarv *(Eesti NSV Tead. Akad. Geol. Inst. uurimused* **4,** 73, 1959). The females from boulder Sy108 are much smaller (0.90-0.96 mm) and, perhaps, this population represents a smaller sub-species. The males are considerably larger than the females (*c.* 0.98 mm long without velum; domicilium of the females: 0.77-0.80 mm). Therefore, the 3 largest larvae from Backsteinkalk boulders plotted in the diagram (text-fig. 14) and table 12 of Schallreuter (1976, op. cit.) presumably represent males and not stage II, as was assumed at that time, when no complete females were available from those boulders.

Explanation of Plate 9, 14

Fig. 1, 2, ♂ LV (**GPIMH 2496,** 984 μm long excluding spines): fig. 1, ext. lat.; fig. 2, ext. vent. obl.
Scale A (100 μm; x 93), figs. 1, 2.

Remarks (contd.): Based on a supposed ♂ fragment from the Rollsteinkalk boulder Ro2 it was formerly stated (Schallreuter 1976, op. cit., 205) that the males possess a velar flange. The figured specimen herein shows that the velum in males could also be developed only as a row of spines (Pl. **9,** 14, figs. 1, 2).

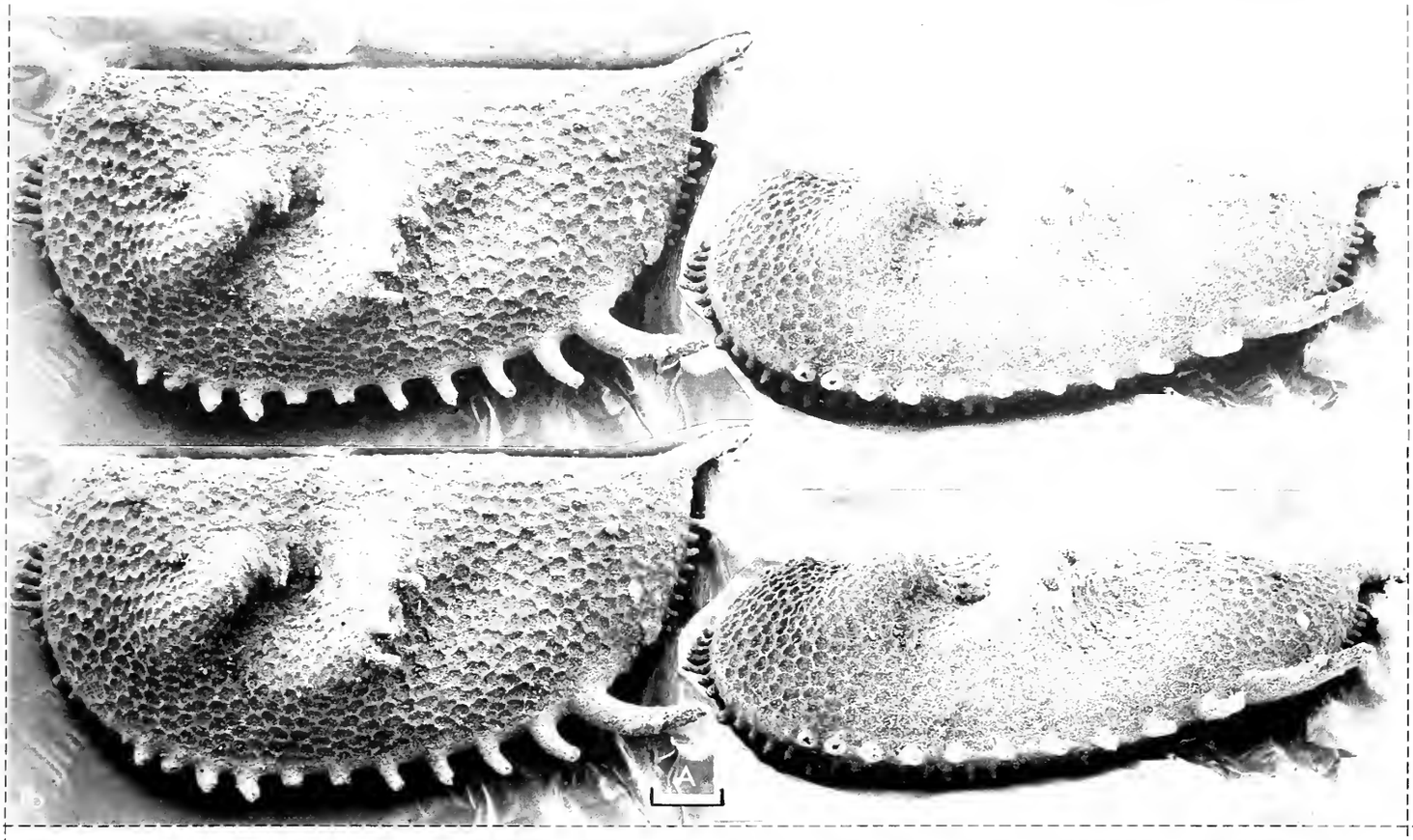
The posteriorly directed spines on the top of the central lobes are, on the figured specimens, distinct only on the posterior lobe, but they also occur on the anterior lobe (see Schallreuter 1976, op. cit., pl. 41 (8), fig. 1). Sometimes, next to the spines on the top of the lobes a row of fine pores occurs (Pl. **9,** 12, fig. 3, Pl. **9,** 14, fig. 2, Pl. **9,** 16, fig. 2).

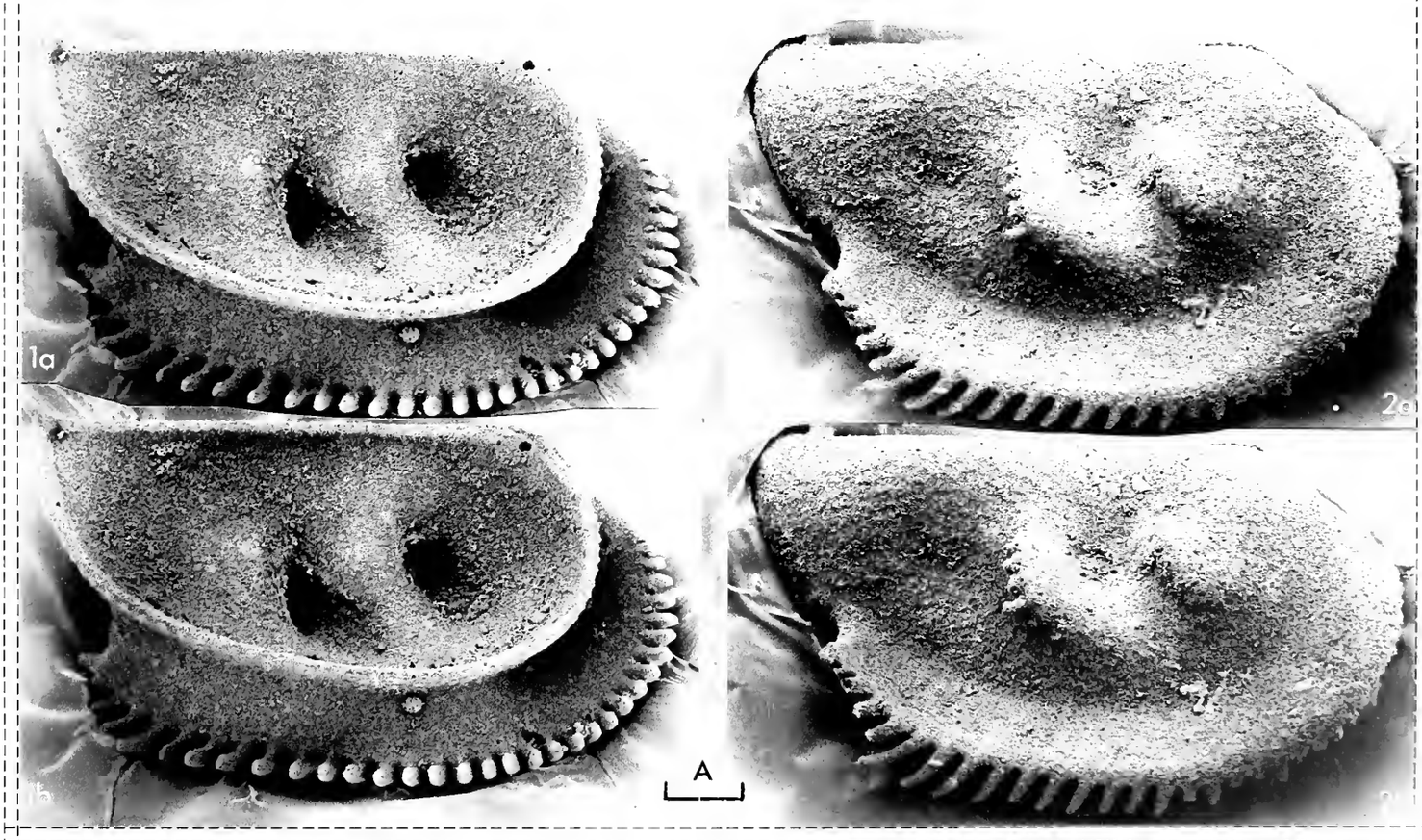
The lectotype of *Ctenonotella ? bidens* (Krause) is 0.83 mm long without velum (A. Krause, *Z. Deutsch. geol. Ges.*, **44** (3), 396 1892), and in this respect is of about the same size as the figured females of *B. serralobata*. In contrast to *B. serralobata* the flange in *C. ? bidens* reaches the cardinal corner and does not extend peripherally into spines (A. Krause, op. cit., pl. 22, fig. 12). If these features are the result of incorrect drawing *C.? bidens* could possibly be a senior synonym of *B. serralobata*. If the lectotype of *C.? bidens* is not a female valve it is distinguished from the males of the figured taxon by the velar flange.

Distribution: Northern Estonia; Jõhvi (D_1) Stage and Keila Stage (D_2), middle Ordovician. Backsteinkalk erratic boulders (14B2 type) and Rollsteinkalk (Macrouruskalk) erratic boulders (of Keila age) of northern Germany. Upper Viruan (middle Ordovician) Hornstein erratic boulders of the Kaolinsand (Pliocene-Pleistocene) of the Isle of Sylt (N Frisian Is, N Sea), Germany.

Explanation of Plate 9, 16

Fig. 1, ♀ LV, int. lat. (**GPIMH 2497,** 927 μm long excluding acroidal spine); fig. 2, ♀ RV, ext. lat. (**GPIMH 2498,** 902 μm long).
Scale A (100 μm; x 100), figs. 1, 2.


A


1a
2a
A

595.336.13 (113.313) (261.24 : 161.018.57 + 261.23 : 161.005.54) : 551.35 (26.03)

ON *BYRSOLOPSINA MANCA* SCHALLREUTER sp. nov.

by Roger E. L. Schallreuter
(University of Hamburg, German Federal Republic)

Byrsolopsina manca sp. nov.

Holotype: Geologisch-Paläontologisches Institut und Museum, University of Hamburg, no. **2519,** RV. [Paratypes: nos. **2520-2525**].

Type locality: Öjlemyrflint erratic boulder (no. G30), Isle of Gotland (Baltic Sea), beach opposite the Isle of Lilla Karlsö; lat. 57° 18′N, long. 18° 8′ E.; Upper Ordovician .

Derivation of name: Latin, *mancus*, meaning incomplete, imperfect; alluding to the incompletely reticulated lateral surface.

Figured specimens: Geologisch-Paläontologisches Institut und Museum, University of Hamburg (GPIMH) nos. **2519** (RV: Pl. **9,** 18, fig. 1), **2520** (RV: Pl. **9,** 18, fig. 2), **2521** (LV: Pl. **9,** 20, fig. 1) and **2526** (LV: Pl. **9,** 20, fig. 2). From the type locality, boulder no. G30 (nos. **2519-2521**), coll. by the author in 1976, and from Öjlemyrflint erratic boulder no. Sy56 (no. **2526**) of the Upper Kaolinsand (Lower Pleistocene, near Braderup, Isle of Sylt (N Frisian Is, N Sea); lat. 54° 56′ N, long. 8° 21′ E, coll. by Ulrich von Hacht in 1977.

Explanation of Plate 9, 18

Fig. 1, RV, ext. lat. (holotype, **GPIMH 2519,** 612 μm long); fig. 2, RV, ext. lat. (paratype, **GPIMH 2520,** 639 μm long). Scale A (100 μm; x 140), figs. 1, 2.

Diagnosis: Species of *Byrsolopsina* with valves up to 0.64 mm long and moderately high (length:height ratio 1.75-1.55). Hinge-line short, cardinal angles distinctly greater than 90°. Lateral surface has fine, scattered puncta; punctate area generally tapering in an anterior direction.

Remarks: Of all the species of *Byrsolopsina* Swain & Cornell (*in* Swain *et al., J. Paleo.* **35** (2), 363, 1961), *B. manca* most resembles *B. elkrunensis* Swain (*Ibid.* **36** (4), 725, pl. 109, fig. 2, 1962), particularly in the fine, incomplete punctation of its lateral surface. *B. manca* is distinguished from *B. elkrunensis* mainly by its shorter hinge-line and correspondingly larger cardinal angles.

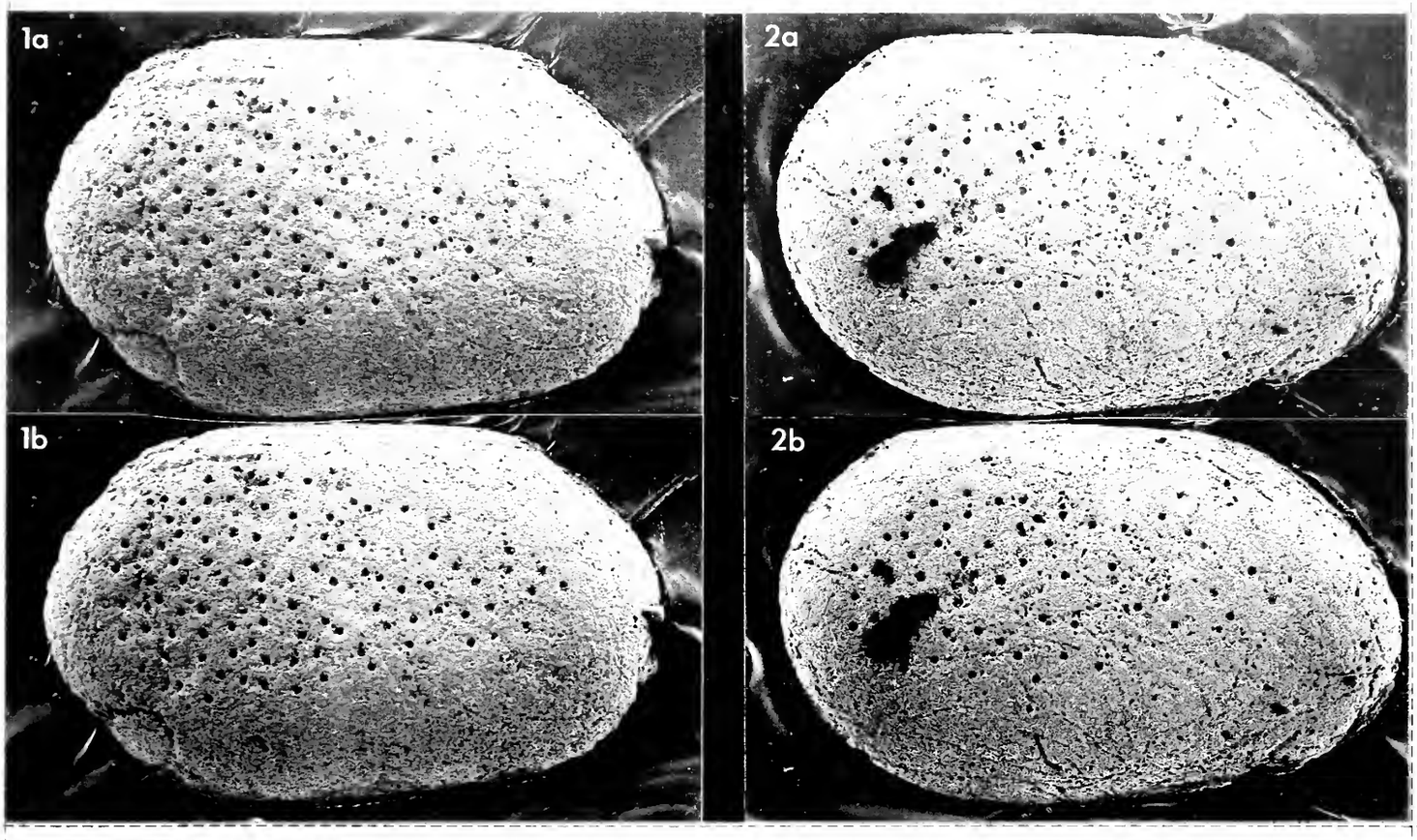
Compared with *B. manca, B. irregularis* (Keenan) (*J. Paleo.* **25** (5), 562, 1951) has smaller cardinal angles and a different pattern of distribution of puncta (Keenan 1951, pl. 78, fig. 34; Copeland, *Bull. Geol. Surv. Canada* **187,** pl. 4, fig. 2, pl. 5, figs. 4, 8, 1970).

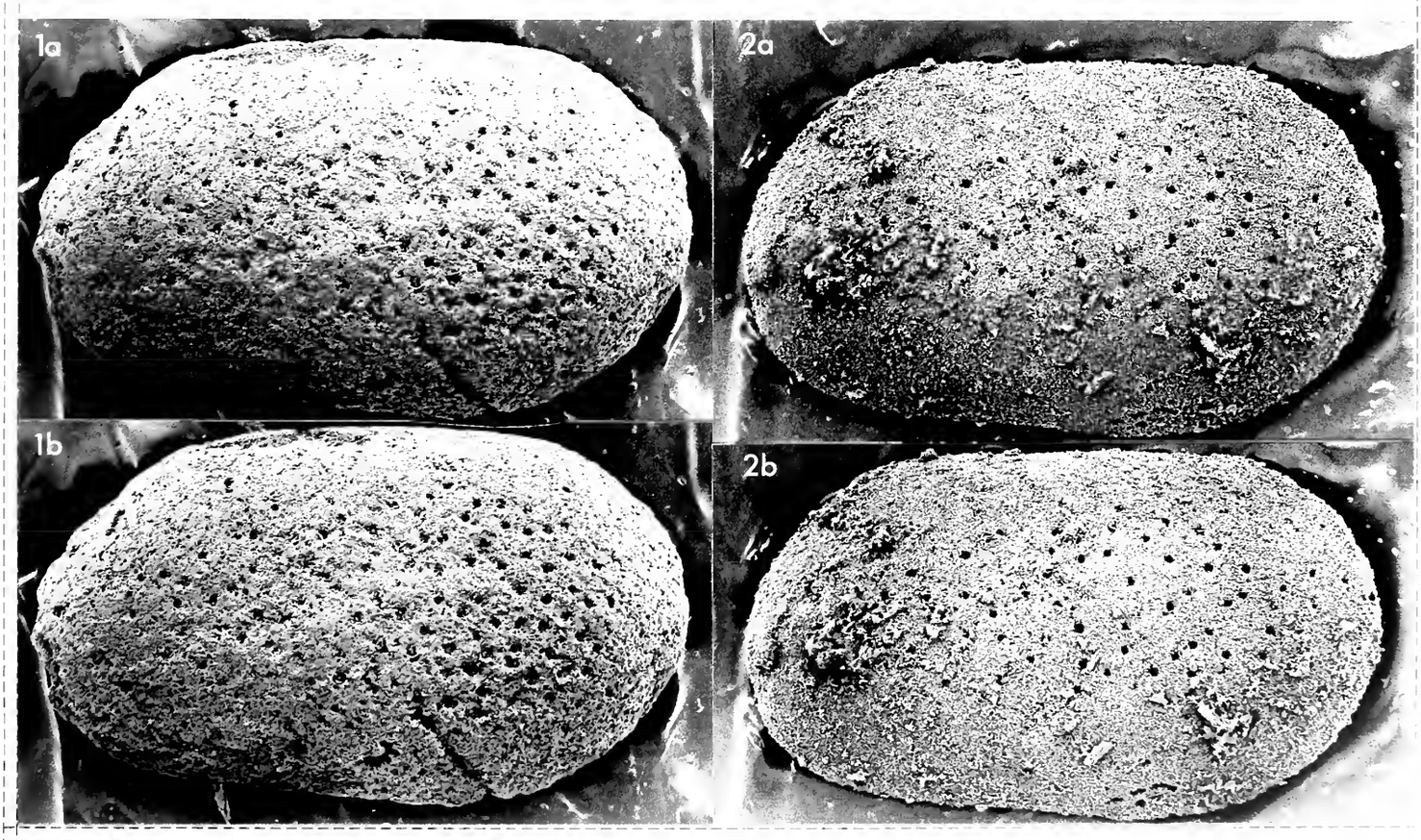
Parapyxion sp. of Gailite [*Fauna i stratigrafija paleozoja i mesozoja Pribaltiki i Belorussii (The Fauna and Stratigraphy of Palaeozoic and Mesozoic of Baltic and Byelorussia)*, 63, 1975] is possibly a congeneric form. Compared to *B. manca* it is larger, relatively higher, more elliptical and punctate only in the dorsocentral region.

Distribution: Known from the Öjlemyrflint (Upper Ordovician) erratic boulders of the Isle of Gotland (Baltic Sea) and of the Upper Kaolinsand (Lower Pleistocene) of the Isle of Sylt (N Frisian Is, N Sea).

Explanation of Plate 9, 20

Fig. 1, LV, ext. lat. (paratype, **GPIMH 2521,** 640 μm long); fig. 2, LV, ext. lat. (**GPIMH 2526,** 545 μm long). Scale A (100 μm; x 145), fig. 1; scale B (100 μm; x 165), fig. 2.


1a
2a
1b
2b


1a
2a
1b
2b

Stereo-Atlas of Ostracod Shells 9 (4) 21-26 **(1982)**
595.337.14 (119.9 + 119.1) (261.27 : 162.006.54 + 420.162 : 001.50) : 551.35

ON *LOXOCONCHA CUNEIFORMIS* MALCOLMSON

by David J. Horne and Eric Robinson
(City of London Polytechnic and *University College, London, England)*

Loxoconcha cuneiformis Malcolmson, 1886

1886 *Lopoconcha cuneiformis (sic)*, n. sp. Brady MS; S. M. Malcolmson, *Rep. Proc. Belf. Nat. Fld. Club*, appendix 1884-85, 261, pl. 25, figs. 1, 2.

Holotype: A male carapace (split into valves and remnants of soft parts dissected); G. S. Brady collection, Hancock Museum, Newcastle-upon-Tyne, no catalogue number but placed in a separate, labelled slide.

Type locality: Rockport, County Down, Ireland, approx. lat. 54° 39′ N, long. 5° 46′ W; intertidal, Recent.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. **OS 12135** (♂RV: Pl. **9,** 22, fig. 1), **OS12136** (♂LV: Pl. **9,** 22, fig. 2), **OS 12137** (♀car.: Pl. **9,** 22, fig. 3), **OS 12138** (♂LV: Pl. 9, 24, fig. 1), **OS 12139** (♂RV: Pl. **9,** 24, figs. 2, 3, 4). Hancock Museum specimen (holotype: Text-figs. 1, 2). With the exception of the holotype, all specimens were collected by E. Robinson from Pleistocene (Ipswichian) marine clay in channels cut into Tertiary deposits on the foreshore at Selsey, Sussex, S England (approx. lat. 50° 47′ N, long. 0° 50′ W).

Explanation of Plate 9, 22

Fig. 1, ♂ RV, ext. lat. (**OS 12135,** 550 μm long); fig. 2, ♂ LV, ext. lat. (**OS 12136,** 560 μm long); fig. 3, ♂ car., ext. l. lat. (**OS 12137,** 500 μm long).
Scale A (100 μm; x 110), figs. 1-3.

Diagnosis: Carapace surface finely pitted, with ghost reticulation. Cuneate in dorsal view, with maximum width in front of mid-length. Strongly dimorphic, male markedly more elongate than female.

Remarks: Malcolmson sent his only specimen of this species to G. S. Brady, in whose collection it remains to this day. Brady recognised it to be a new species and gave it the manuscript name *L.cuneiformis;* it was, however, Malcolmson, not Brady, who published the type description.

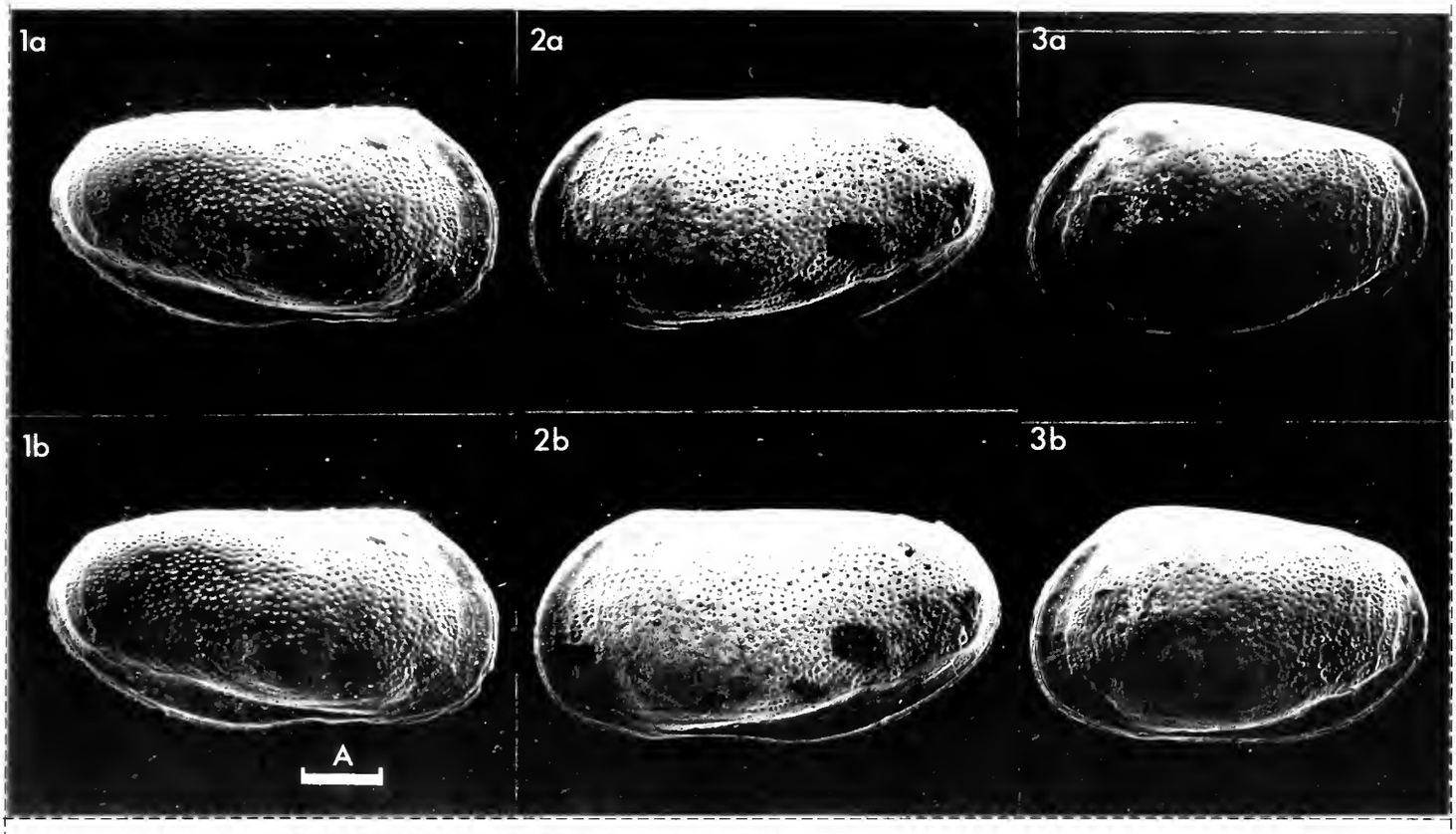
Brady and Norman *(Scient. Trans. R. Dubl. Soc.*, ser. 2, **4,** 186, 1889) regarded *L. cuneiformis* as conspecific with *Loxoconcha tamarindus* (Jones) *(sensu* Brady (1868) = *Lindisfarnia laevata* (Norman) – see Horne & Kilenyi, *Stereo-Atlas of Ostracod Shells,* **8,** 107-116, 1981). From our examination of the holotype it is clear that *L.cuneiformis* is indeed a valid species, easily distinguished from related species by its cuneate outline in dorsal view.

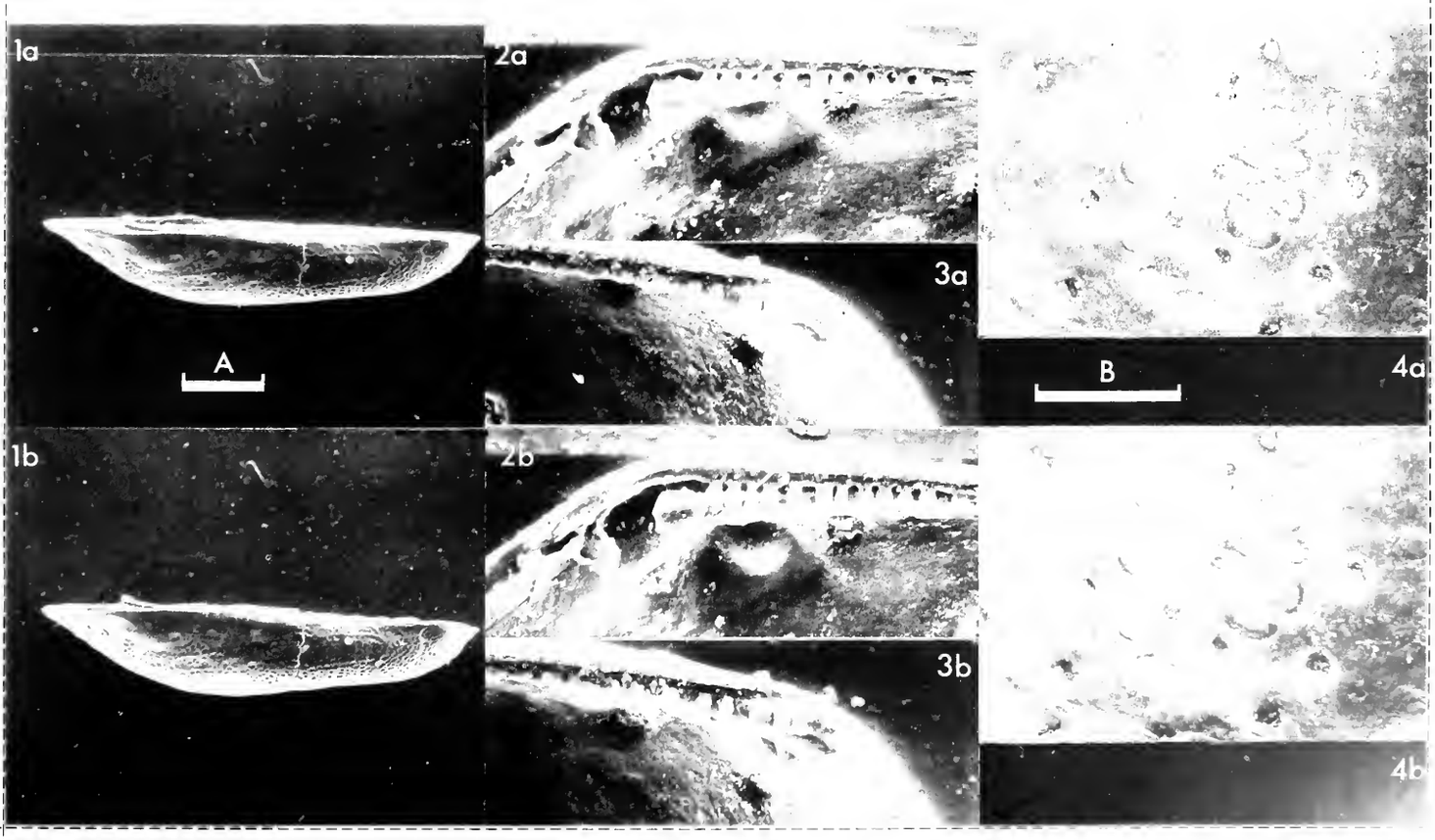
Apart from the presumed Recent holotype, we have only seen Pleistocene specimens of this species. Malcolmson's specimen contained a few poorly-preserved remnants of appendages, but this does not exclude the possibility that it may be a Pleistocene relict; we have found appendages in undoubted Pleistocene specimens of other species, obtained from borehole material.

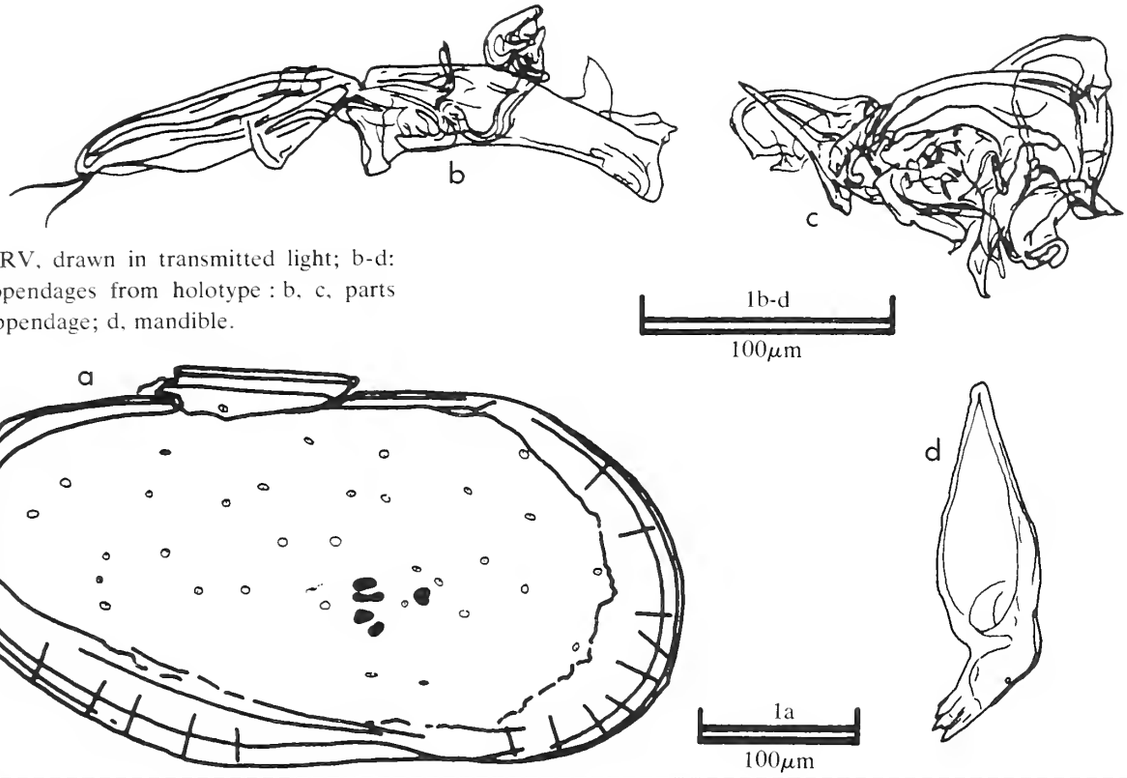
Distribution: Pleistocene and Recent(?): British Isles (herein).

Explanation of Plate 9, 24

Fig. 1, ♂LV, ext. dors. (**OS 12138,** 540 μm long); figs. 2, 3, ♂RV, ant. and post. hinge elements (**OS 12139**); fig.4, ♂RV, int. musc. sc. (**OS 12139**).
Scale A (100 μm; x 110), fig. 1; scale B (50 μm; x 400), figs. 2-4.


1a
2a
3a
1b
2b
3b
A


1a
2a
3a
4a
A
B
1b
2b
3b
4b



Text-fig. 1.
a: holotype, ♂ RV, drawn in transmitted light; b-d: remnants of appendages from holotype : b, c, parts of copulatory appendage; d, mandible.

595.337.14 (119.9) (261.2 : 162.017.28) : 551.35

ON *LOXOCONCHA DIMORPHA* HARTMANN

by David J. Horne
(City of London Polytechnic, England)

Loxoconcha dimorpha Hartmann, 1959

1959 *Loxoconcha dimorpha* n. sp. G. Hartmann, *Zool. Anz.*, **162** *(pars)*, 163-166, text-figs. 12, 13, 16, 17, 18 only, *(non* text-figs. 10, 11, 14, 15, 20).

Lectotype: (here designated). A decalcified male carapace with appendages (Paralectotype, a decalcified female carapace with appendages; syntypes, no. **K-28132**). All deposited in the Zoologisches Institut und Zoologisches Museum, Universität Hamburg.

Type locality: Tenerife, Canary Islands (approx. lat. 28° 15′ N, long. 16° 35′ W); intertidal, Recent.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. **1982.32** (♂LV: Pl. **9,** 28, fig. 1; Pl. **9,** 30, figs 1, 5), **1982.33** (♀LV: Pl. **9,** 28, fig. 2; Pl. **9,** 30, fig. 3), **1982.34** (♀RV: Pl. **9,** 28, fig. 3), **1982.35** (♂LV + appendages: Pl. **9,** 30, fig. 2; Text-figs. 1a-e, 2b), **1982.36** (♀LV: Pl. **9,** 30, fig. 4). Hamburg Museum specimens (lectotype, ♂copulatory appendage: Text-fig. 2a), **K-28132** (syntype, ♂ RV: Text-fig. 2c). Nos. **1982.32-36** collected alive from intertidal algae at El Medano, Tenerife, Canary Islands (approx. lat. 28° 15′ N long. 16° 35′ W) by M. Linley in 1980. Hamburg Museum specimens from Hartmann's syntypic material.

Explanation of Plate 9, 28

Fig. 1, ♂LV, ext. lat. (**1982.32,** 580 μm long); fig. 2, ♀LV, ext. lat. (**1982.33,** 490 μm long); fig. 3, ♀RV, ext. lat. (**1982.34,** 480 μm long). Scale A (100 μm; x 110), figs. 1-3.

Diagnosis: Carapace robust, strongly ornamented, with pitting in central area giving way to reticulation in marginal areas. Sexual dimorphism marked, male more elongate than female. In dorsal view, greatest width behind mid-length. Male copulatory appendages of typical *Loxoconcha* shape: basal part broadly oval and about twice the size of the sub-triangular head-piece which has a convex ventral margin and a rounded, slightly upturned distal (anterior) corner.

Remarks: A comparison of specimens of two species of *Loxoconcha* from Tenerife with the original description and figures of *L.dimorpha* suggested that Hartmann *(op. cit.)* had inadvertantly combined the male of one species with the female of the other and described them as a single species. This view was confirmed by the original author (Hartmann, pers. comm.) and by a re-examination of his syntypic material, which was found to include adult male specimens corresponding to the type description and figures of the male of *L.dimorpha,* but adult females of *two* species. One female form, corresponding to Hartmann's original description and figures of the female of *L.dimorpha,* belonged to a species described elsewhere as new (Horne, *Stereo-Atlas of Ostracod Shells,* **9** (6), 33-40, 1982); the other matched those illustrated herein as the true female of *L.dimorpha.*

A male and a true female of *L.dimorpha,* selected from the syntypes and dissected, are designated herein as lectotypes.

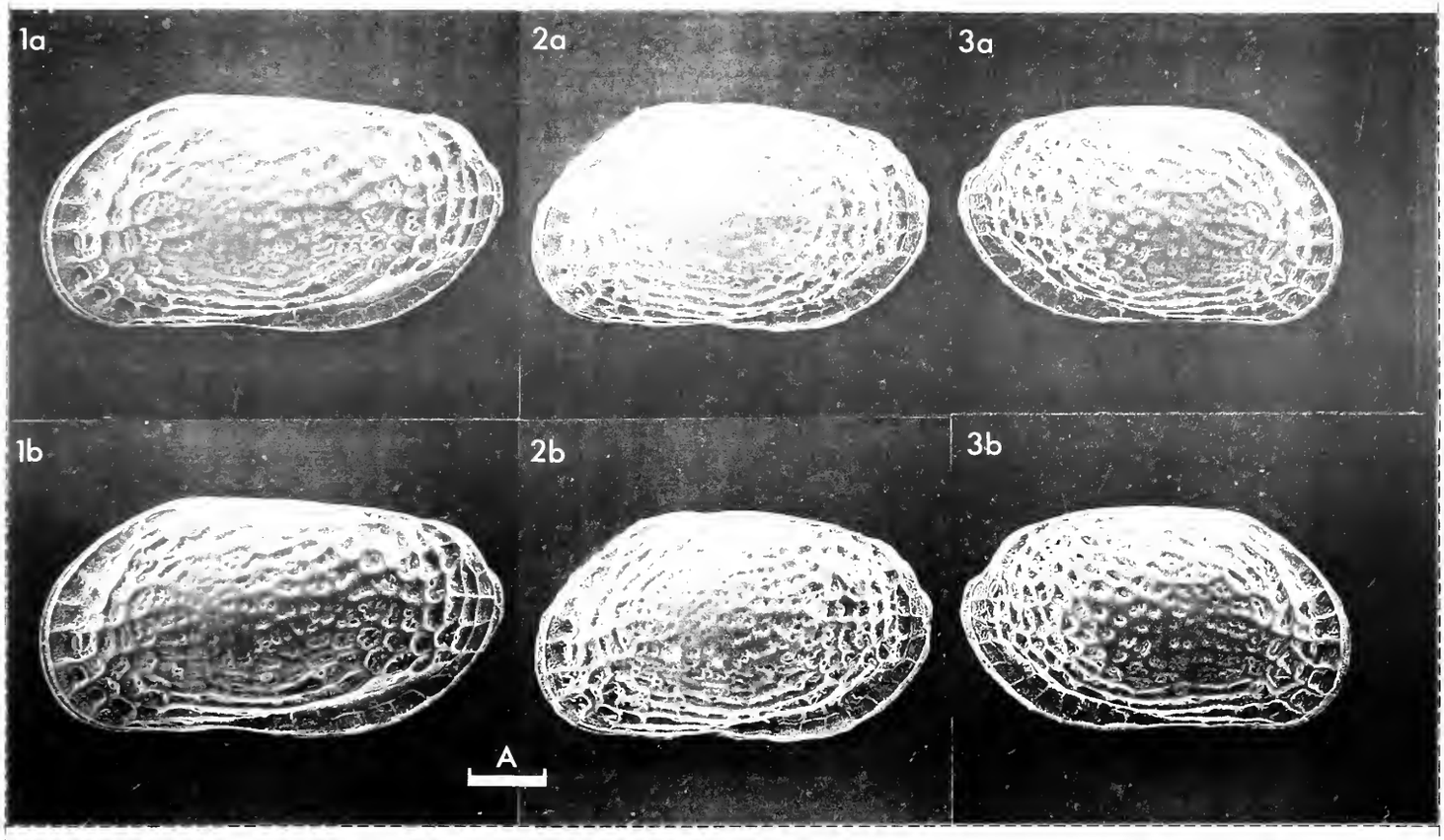
Minor differences between the male copulatory appendages of the type specimens and those of the more recently obtained examples (see text-figs. 2a-b) are regarded as intraspecific variations, and may even be due to disturbance of the appendages during dissection.

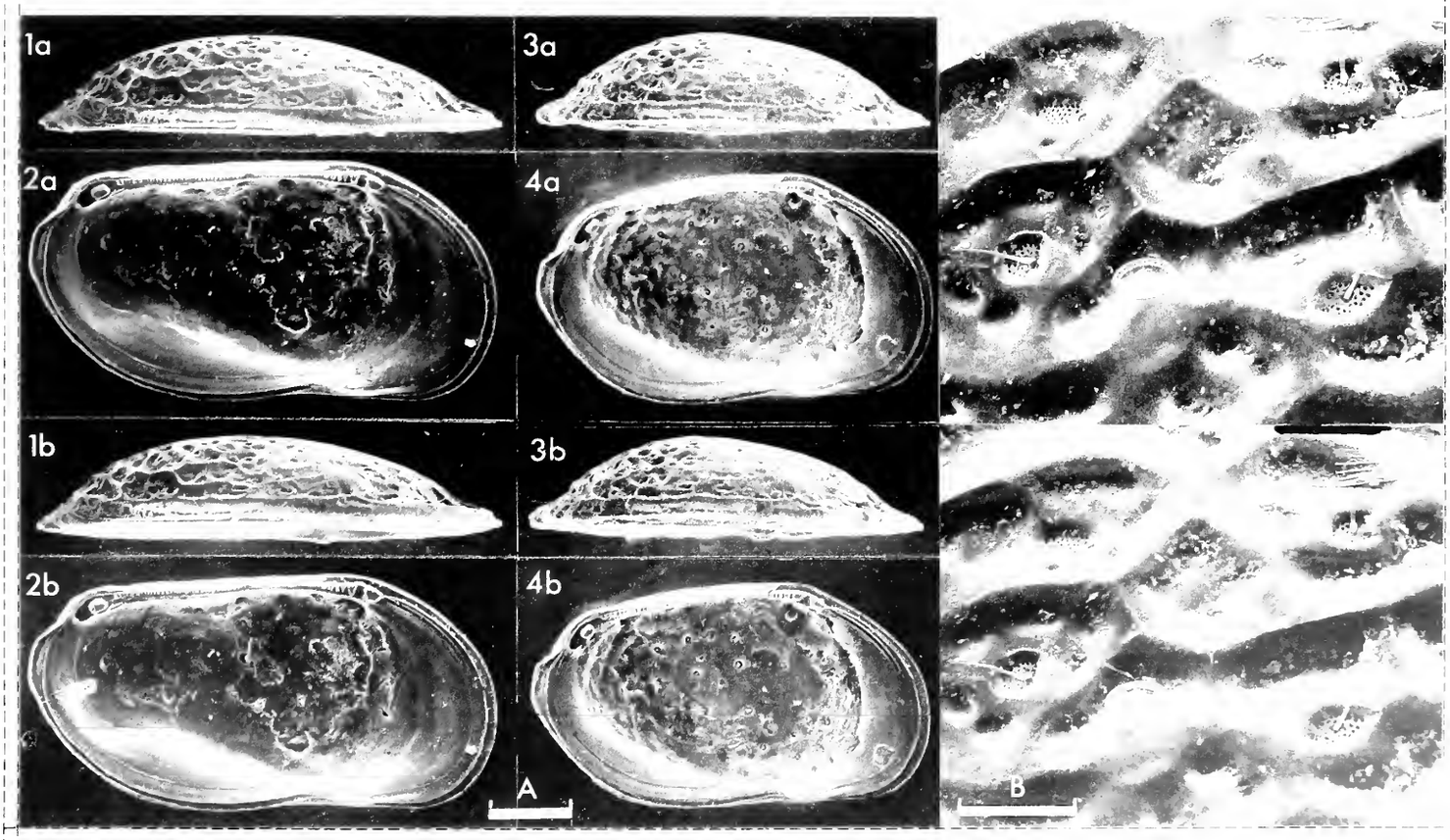
Distribution: Recent: known only from the intertidal zone of Tenerife (Hartmann, *op. cit.*, and herein).

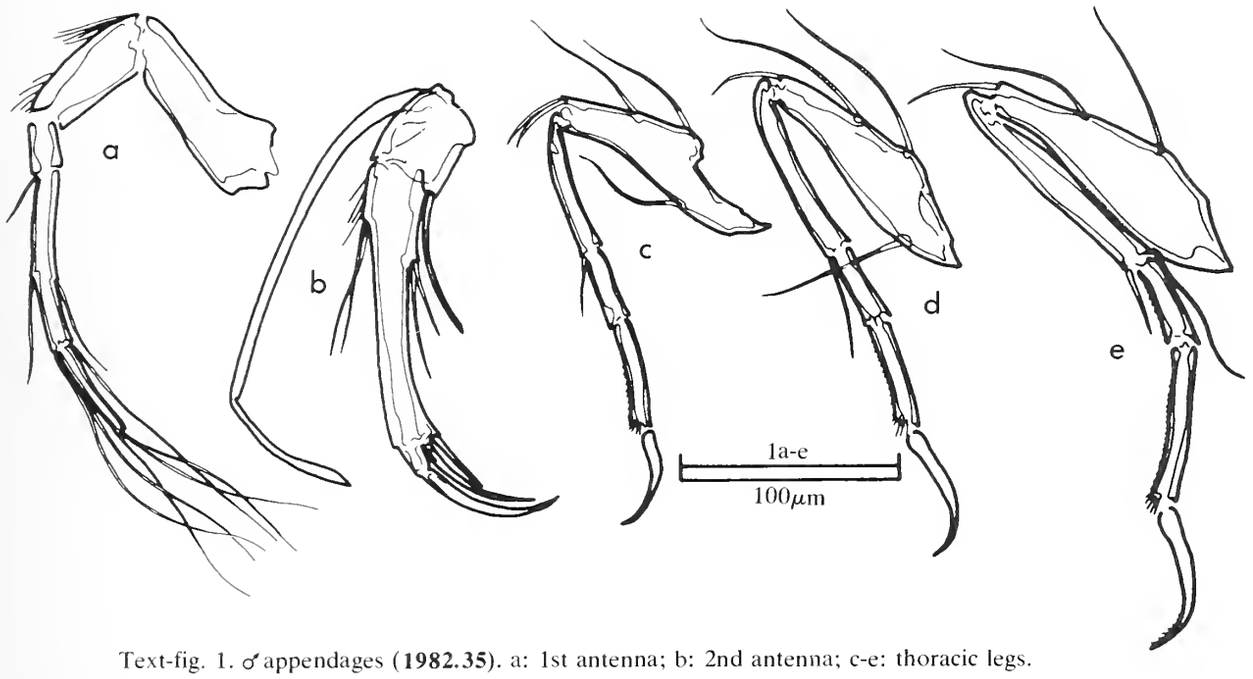
Explanation of Plate 9, 30

Fig. 1, ♂LV, ext. dors. (**1982.32,** 580 μm long); fig. 2, ♂LV, int. lat. (**1982.35,** 590 μm long); fig. 3, ♀LV, ext. dors (**1982.33,** 490 μm long); fig. 4, ♀LV, int. lat. (**1982.36,** 500 μm long); fig. 5, ♂LV ext. lat., detail of dorsal marginal area showing ornament and sieve pores, (**1982.32**).

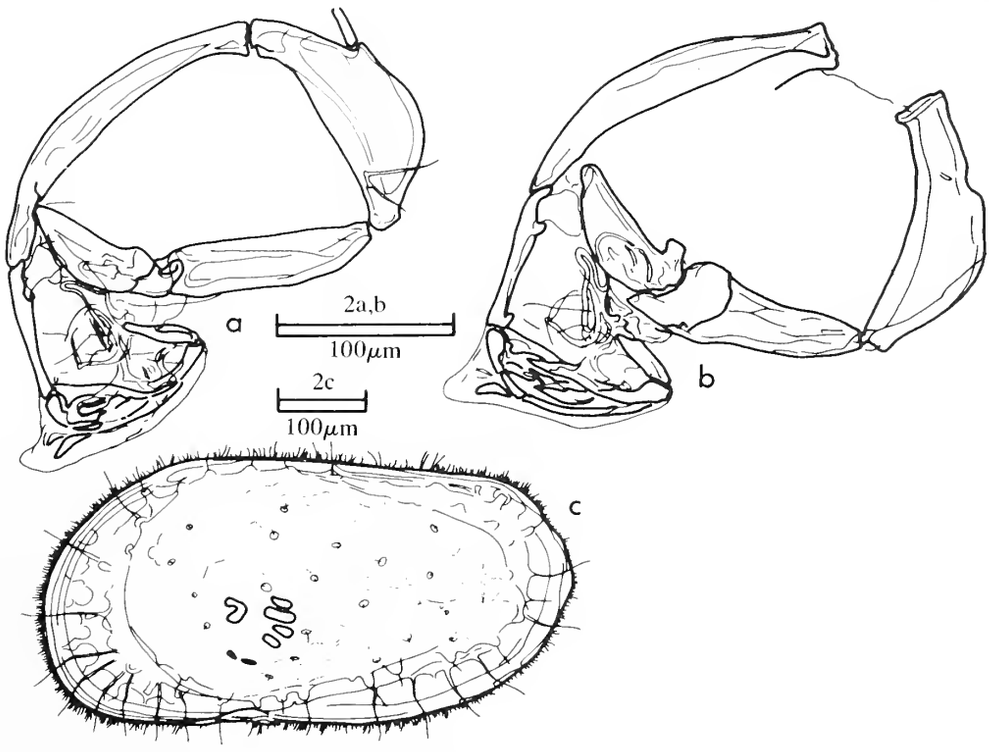
Scale A (100 μm; x 110), figs. 1-4; scale B (25 μm; x 700), fig. 5.


1a
2a
3a
1b
2b
3b
A


1a
3a
2a
4a
1b
3b
2b
4b
A
B



Text-fig. 1. ♂ appendages (**1982.35**). a: 1st antenna; b: 2nd antenna; c-e: thoracic legs.



Text-fig. 2. a: ♂ copulatory appendage (lectotype; Hamburg Museum specimen); b: ♂ copulatory appendage (**1982.35**); c: ♂ RV (decalcified) seen in transmitted light (syntype, Hamburg Museum no. **K-28132**).

Stereo-Atlas of Ostracod Shells 9 (6) 33-40 **(1982)**
595.337.14 (119.9) (261.2 : 162.017.28 + 162.017.32) : 551.35

ON *LOXOCONCHA LINLEYI* HORNE sp. nov.

by David J. Horne
(City of London Polytechnic, England)

Loxoconcha linleyi sp nov.

? 1855 *Cythere maculata* sp. nov. S. Fischer, *Abh. bayer. Akad. Wiss.*, **7**, 656-658, Pl. 2, figs. 9-12 (=*nomen dubium*).
1911 *Loxoconcha impressa* (Baird); G. S. Brady, *Proc. zool. Soc. Lond.*, **27**, 595 *(pars)*.
1959 *Loxoconcha dimorpha* sp. nov. G. Hartmann, *Zool. Anz.*, **162**, *(pars)*, 163-166, text-figs. 10, 11, 14, 15, 20 only; (*non* text-figs. 12, 13, 16, 17, 18).

Holotype: A male carapace + appendages (split into valves and dissected), Brit. Mus. (Nat. Hist.) **1982.37.** [Paratypes: a female carapace, split into valves, **1982.38**; and a male carapace + appendages, split into valves and dissected, **1982.39**].

Type locality: El Medano, Tenerife, Canary Islands, approx. lat. 28° 15′ N, long. 16° 35′ W; intertidal, Recent.

Derivation of name: After Mike Linley, who collected the sample in which this species was first recognised.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. **1982.37** (holotype, ♂ car.; RV: Pl. **9**, 34, figs. 1, 3; LV, Pl. **9**, 38, fig. 3), **1982.38** (♀ car.; RV: Pl. **9**, 34, figs. 2, 4; LV: Pl. **9**, 38, fig. 2, Pl. **9**, 40, fig. 1), **1982.39** (♂ appendages: Text-figs. 1a-e, 2a), **1982.40** (♀ RV: Pl. **9**, 36, figs. 1, 2), **1982.41** (♂ RV: Pl. **9**, 36, fig. 3), **1982.42** (♀ LV: Pl. **9**, 38, fig. 1), **1982.43** (♀ LV: Pl. **9**, 40, fig. 3), **1982.44** (♂ RV: Pl. **9**, 40, fig. 2), **1982.45** (♂ copulatory appendage: Text-fig. 2b). Nos. **1982.37-42** were collected alive from intertidal algae at the type locality by M. Linley in 1980. Nos. **1982.43-45**, taken from slide no. **1911.11.8. M3454** in the Norman Collection at the Brit. Mus. (Nat. Hist.), were collected by A. M. Norman between tidemarks on the island of Madeira in spring, 1897, (approx. lat. 32° 45′N, long. 17° 00′ W).

Explanation of Plate 9, 34

Figs. 1, 3, ♂ RV (holotype, **1982.37,** 560 μm long), fig. 1, ext. lat.; fig. 3, ext. dors.; figs. 2, 4, ♀ RV (paratype, **1982.38,** 510 μm long), fig. 2, ext. lat.; fig. 4, ext. dors. Scale A (100 μm; x 120), figs. 1-4.

Diagnosis: Carapace rather quadrate in lateral view. Dimorphic, male more elongate and with a straighter dorsal margin than the female. Finely pitted ornament becoming coarser posteriorly and developing marginally into reticulation, especially in the posterodorsal region. In dorsal view, greatest width at about mid-length. Male copulatory appendages of typical *Loxoconcha* shape: the broadly triangular head-piece about two-thirds the size of the basal part, with an acutely rounded posterior corner and a rounded, tooth-like process at the anterior (distal) corner.

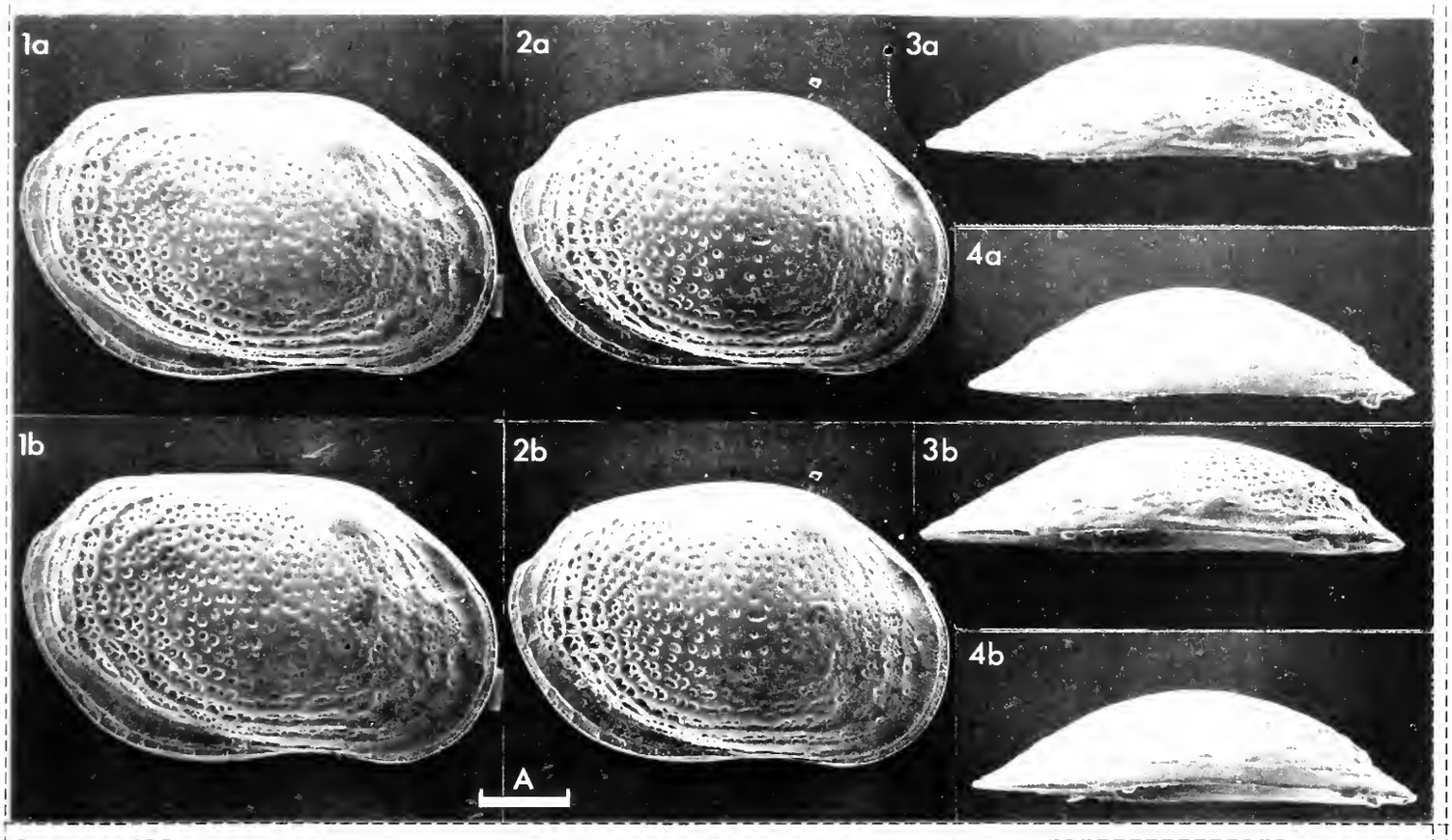
Remarks: Female specimens of *L.linleyi* were erroneously described and figured by Hartmann *(op. cit.)* as the female of *Loxoconcha dimorpha* Hartmann 1959 (see Horne 1982, *Stereo-Atlas of Ostracod Shells*, **9**, (5) 27-32, 1982). Specimens from Madeira in the Brit. Mus. (Nat. Hist.), collected by A. M. Norman and identified by G. S. Brady as *Loxoconcha impressa* (Baird), include both *Loxoconcha rhomboidea* (Fischer) (see Athersuch & Whittaker, *Stereo-Atlas of Ostracod Shells*, **3** (17), 81-90, 1976) and *L.linleyi*. The two species are indeed very similar, but *L.linleyi* is easily distinguished from *L.rhomboidea* by its more quadrate outline, its posterodorsal reticulation, and by the detailed shape of the male copulatory appendages.

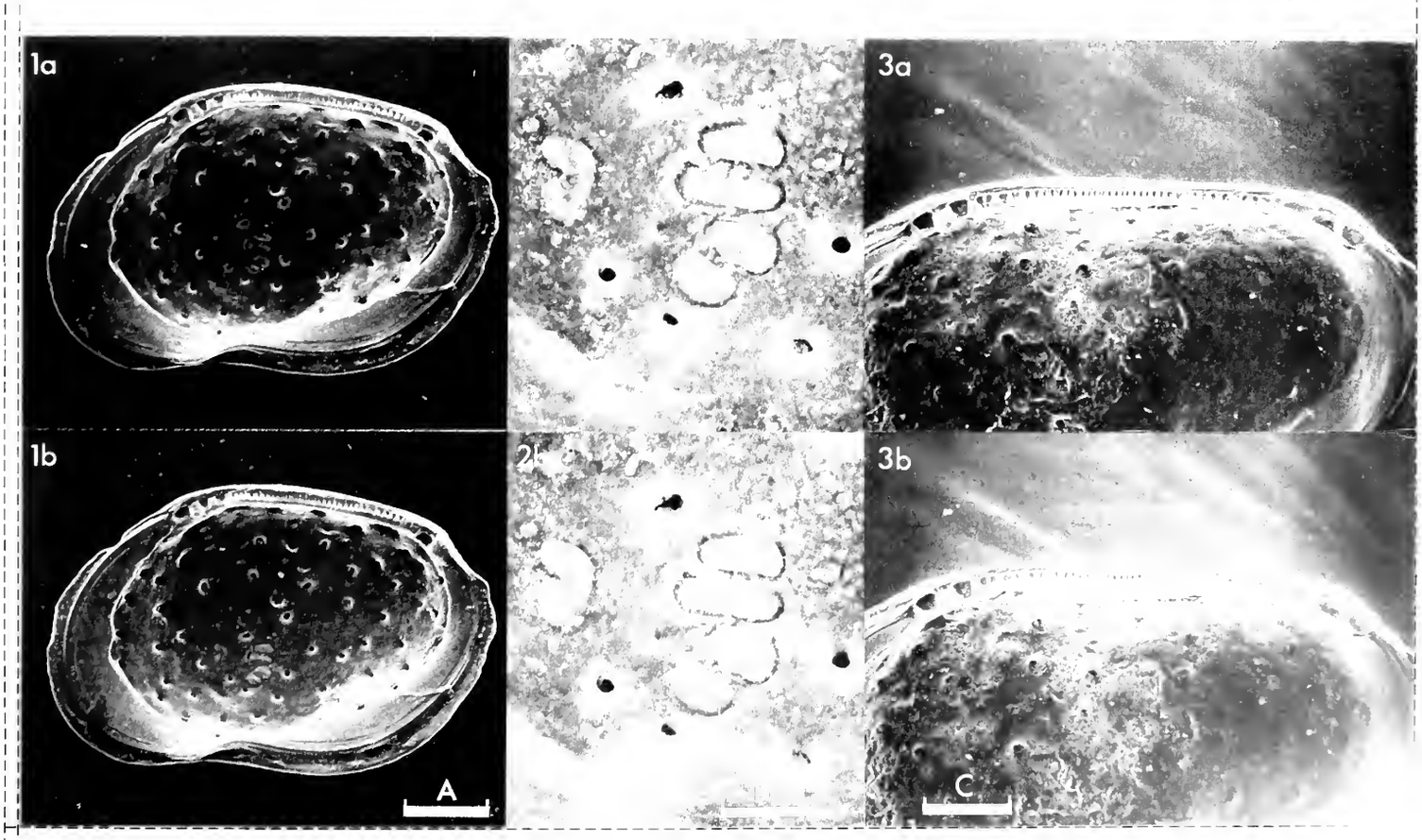
Cythere maculata Fischer 1855, described from Madeira, might possibly be conspecific with *L.linleyi*. Unfortunately Fischer's illustrations are so poor as to make a confident identification impossible, and in the absence of any type specimens it must be regarded as *nomen dubium*. Specimens of *L.linleyi* from Madeira are somewhat thicker-shelled, and the females have less strongly arched dorsal margins, than those from the type locality; minor differences are also apparent between the male copulatory appendages of specimens from the two islands (see text-figs. 2a-b). These variations are presently regarded as intraspecific.

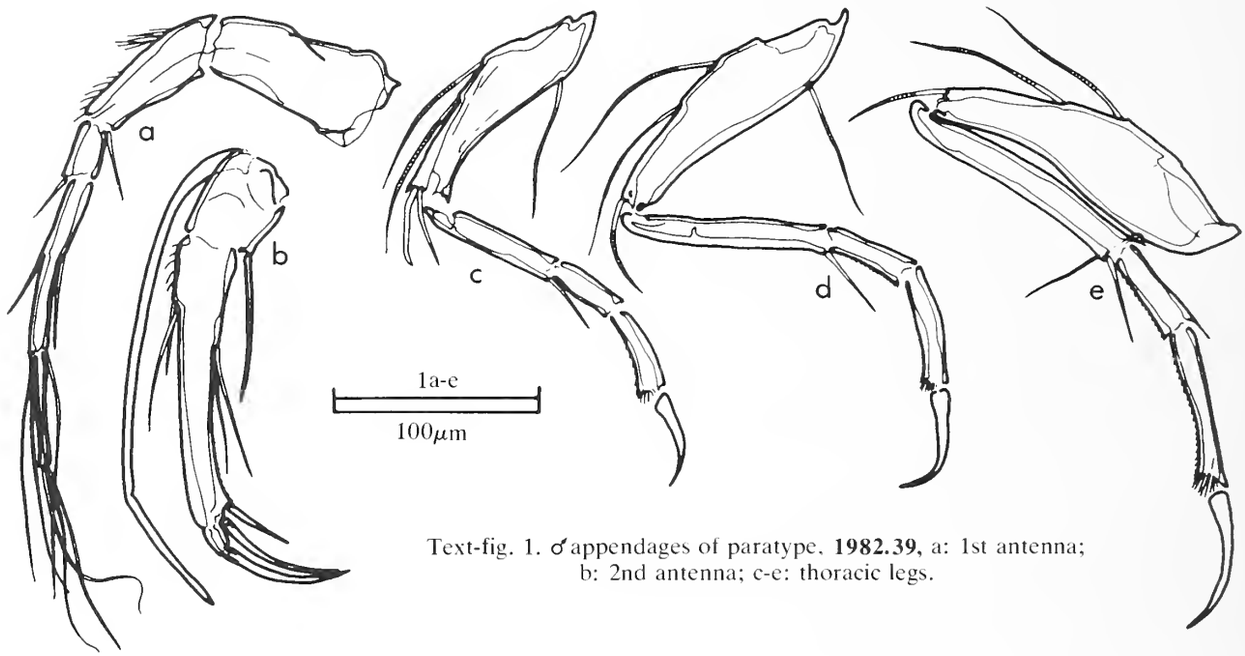
Distribution: Recent: Tenerife and Madeira, intertidal (herein).

Explanation of Plate 9, 36

Figs. 1, 2, ♀ RV (**1982.40,** 530 μm long), fig. 1, int. lat.; fig. 2, int. musc. sc.; fig. 3, ♂ RV, int. hinge (**1982.41**).
Scale A (100 μm; x 120), fig. 1; scale B (25 μm; x 440), fig. 2; scale C (50 μm; x 240), fig. 3.


1a
2a
3a
4a
1b
2b
3b
4b
A


1a
2a
3a
1b
2b
3b
A
C

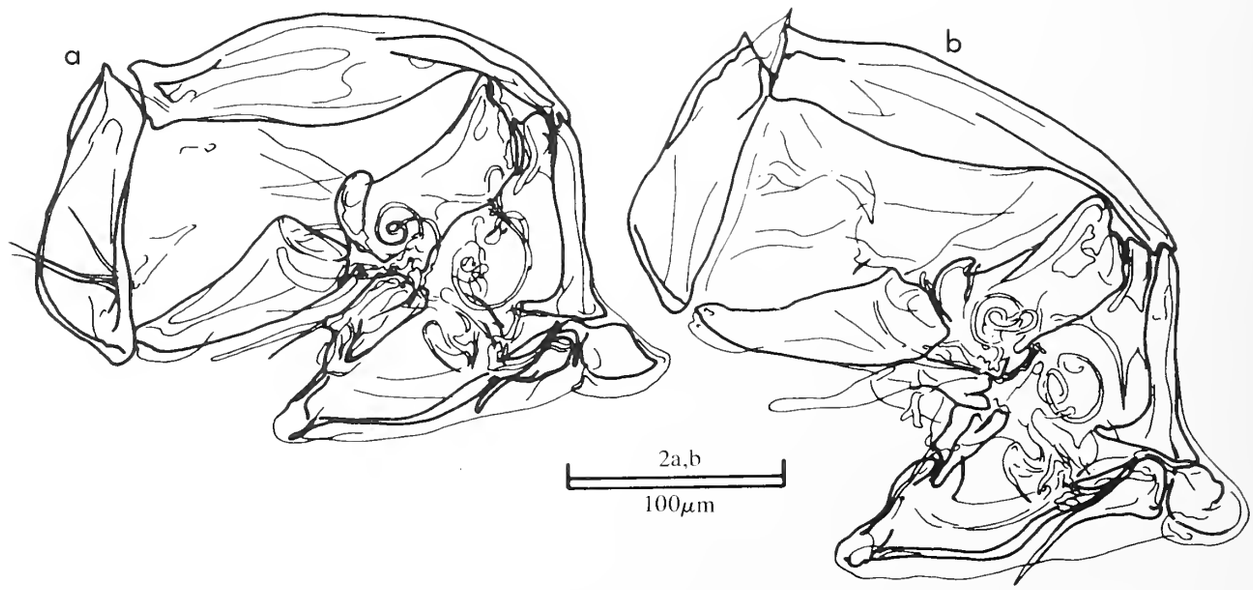


Text-fig. 1. ♂ appendages of paratype, **1982.39,** a: 1st antenna; b: 2nd antenna; c-e: thoracic legs.

Explanation of Plate 9, 38

Fig. 1, ♀ LV, int. lat. (**1982.42,** 520 μm long); fig. 2, ♀ LV, ext. lat. (paratype, **1982.38,** 520 μm long); fig. 3, ♂ LV, ext. lat. (holotype, **1982.37,** 560 μm long).

Scale A (100 μm; x 120), figs. 1-3.

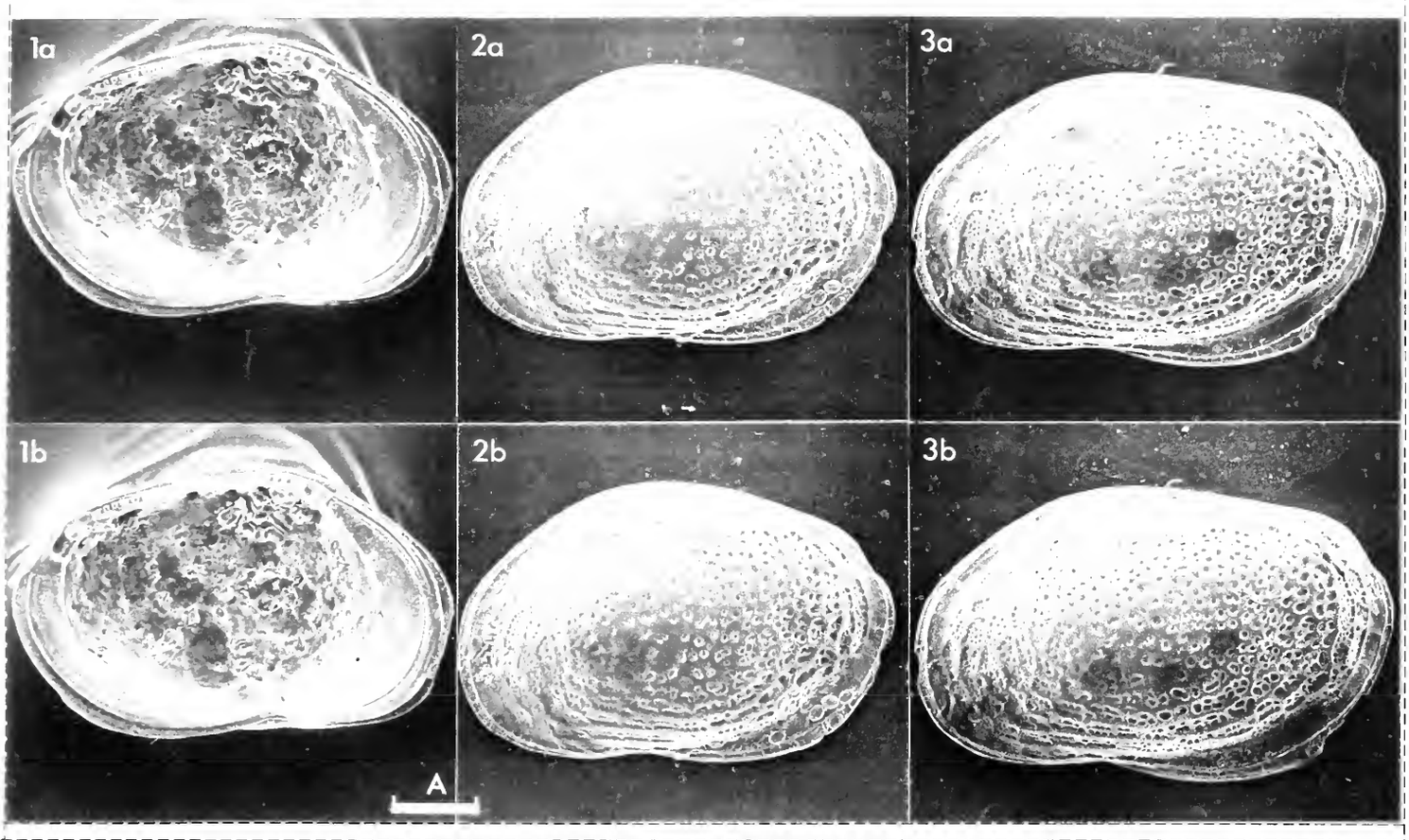


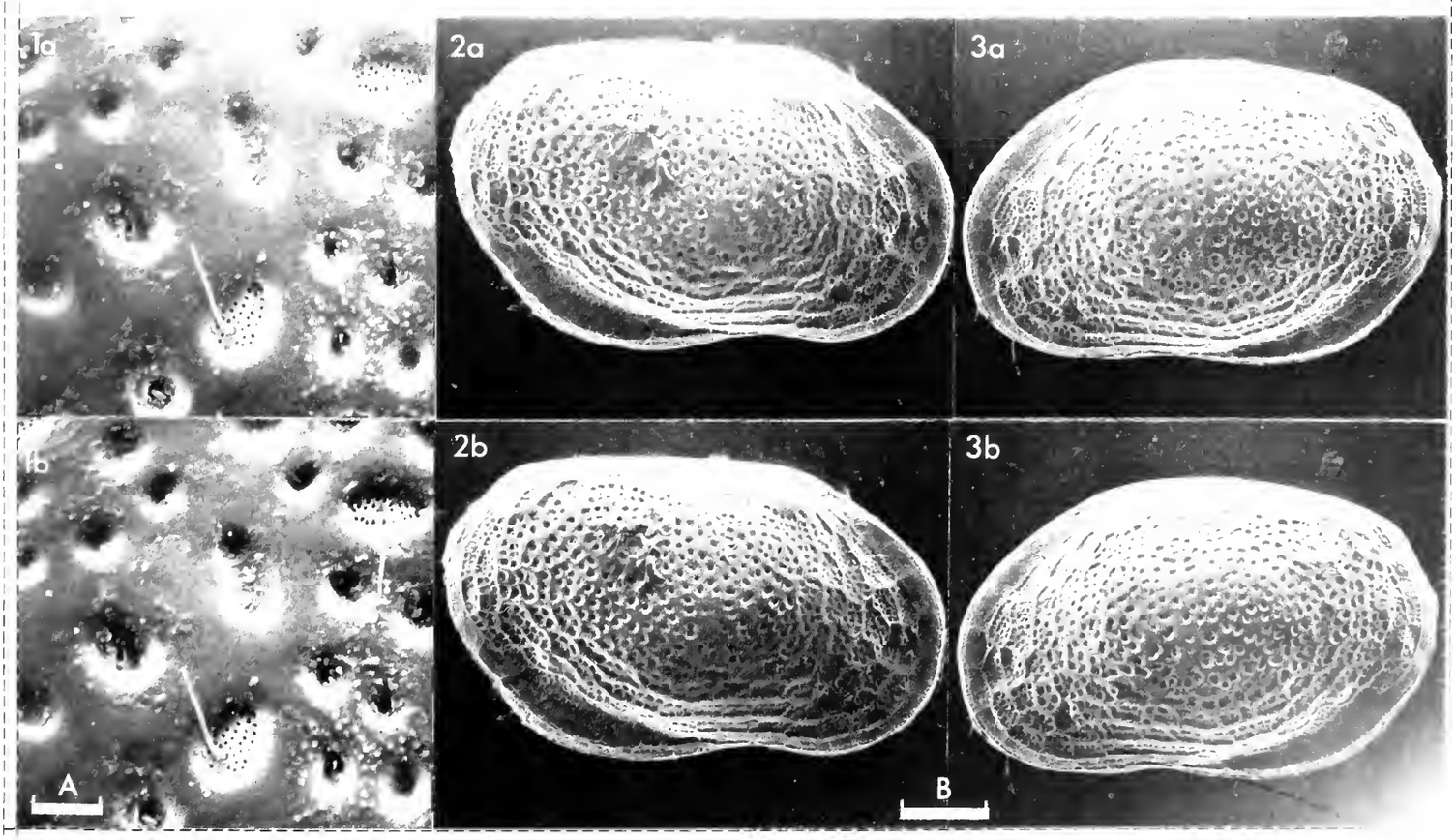
Text-fig. 2. ♂ copulatory appendages. a: (paratype, **1982.39**), from Tenerife; b: (**1982.45**) from Madeira.

Explanation of Plate 9, 40

Fig. 1, ♀ LV, ext. lat., detail of central region showing sieve-pores (paratype, **1982.38**); fig. 2, ♂ RV, ext. lat. (**1982.44,** 580 μm long); fig. 3, ♀ LV, ext. lat. (**1982.43,** 550 μm long).

Scale A (10 μm; x 950), fig. 1; scale B (100 μm; x 120), figs. 2, 3.


1a
2a
3a
1b
2b
3b
A


1a
2a
3a
1b
2b
3b
A
B

Stereo-Atlas of Ostracod Shells 9 (7) 41-46 **(1982)**
595.337.14 (118.21) (931-13 : 163.170.45) : 552.51

ON *WAIPARACYTHEREIS JOANAE* SWANSON

by Kerry Swanson
(University of Canterbury, New Zealand)

Waiparacythereis joanae Swanson, 1969

1969 *Waiparacythereis joanae* K. M. Swanson, Trans. Roy. Soc. N.Z., Earth Sci. **7**(3), 41, pl. 2, figs. 36-38.
1979 *Waiparacythereis joanae* K. M. Swanson, N.Z. Oceanographic Inst. Memoir 78, 28, fig. 33.
1979 *Waiparacythereis joanae* K. M. Swanson, N.Z. Journ. Marine & Freshwater Res. **13**(1), 160, figs. 40-p.

Holotype: New Zealand Geological Survey no. **TO 1009.**

Type locality: M Waipara sequence, Canterbury Province, New Zealand; lat. 43° 0.5′ S, long. 172° 35′ E., 80ft below the top of the Gowan Hill Sandstone. Grid. ref. S68 991121. L Miocene.

Explanation of Plate 9, 42

Fig. 1, RV, ext. lat. (**UCF 1337.1,** 880 μm long); fig. 2, LV, ext. lat. (**UCF 1337.1,** 900 μm long).
Scale A (200 μm long; x 97), fig. 1; scale B (200 μm long; x 93), fig. 2.

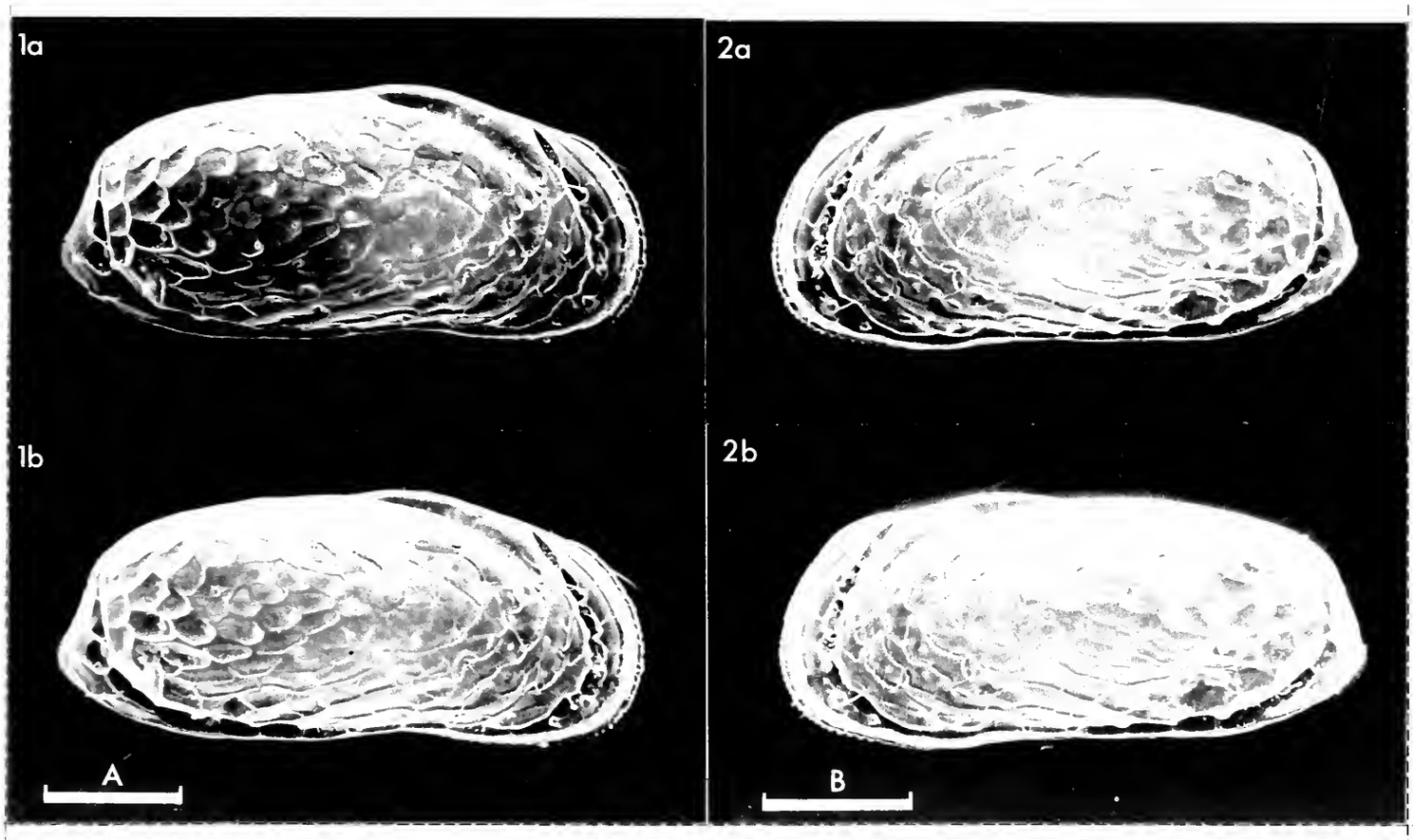
Figured specimens: University of Canterbury (Geol Dept) nos. **UCF 1337.1** (♂ car.; LV and RV: Pl. **9,** 42, figs. 1-2), **UCF 1337.4** (♂ car.; LV: Pl. **9,** 44, figs. 1-3), **UCF 1337.2** (♂ appendages: Text-figs. 1a-c, 2a), **UCF 1337.1** (♂ appendages: Text-figs. 2b-d). All from dredge sample (17.7m), Otago Shelf, South Island, New Zealand; lat. 45° 55′ S, long. 170° 36′E.

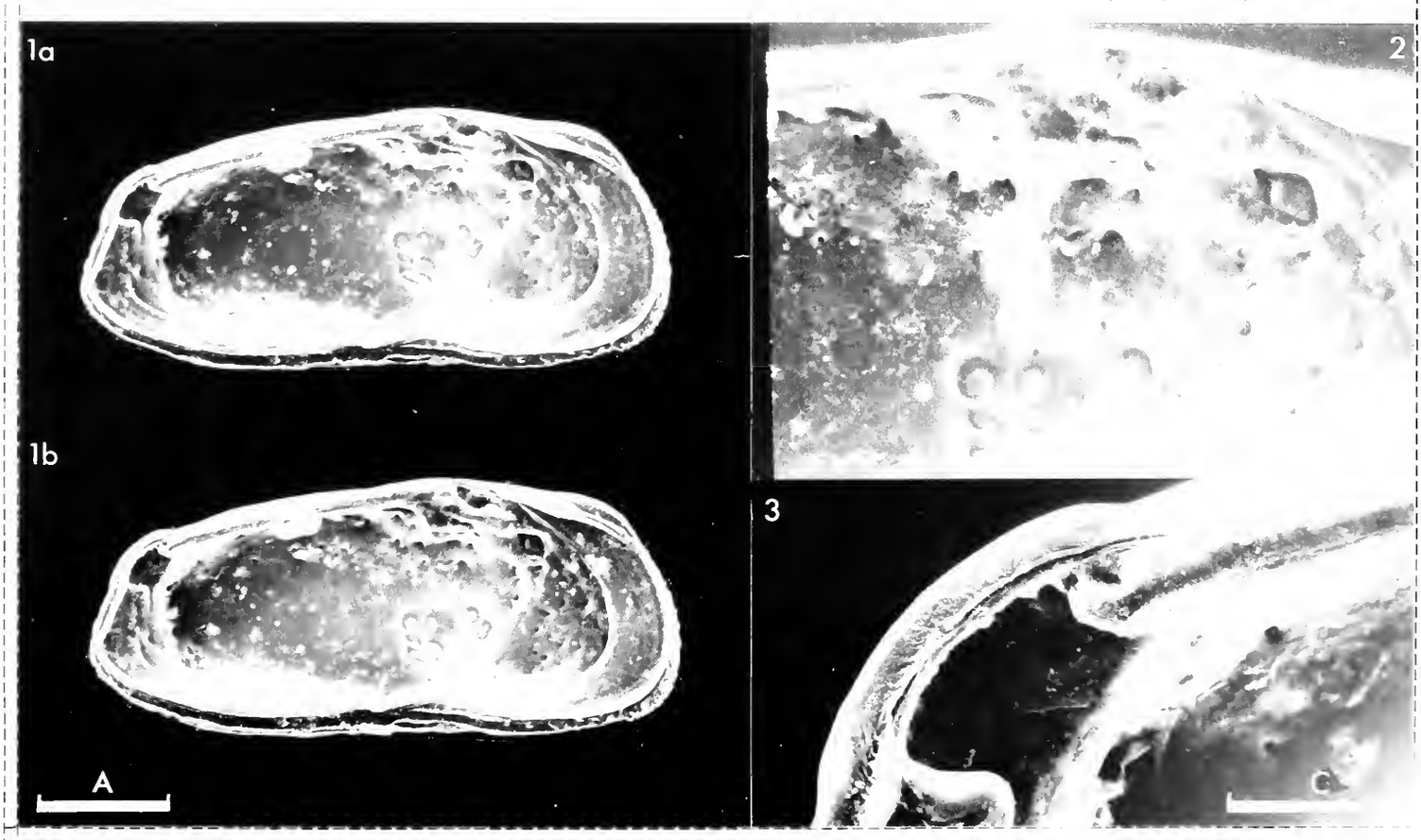
Diagnosis: Carapace large, elongate, strongly inflated posteriorly. Very heavily calcified, Surface ornamentation subdued, especially medially.

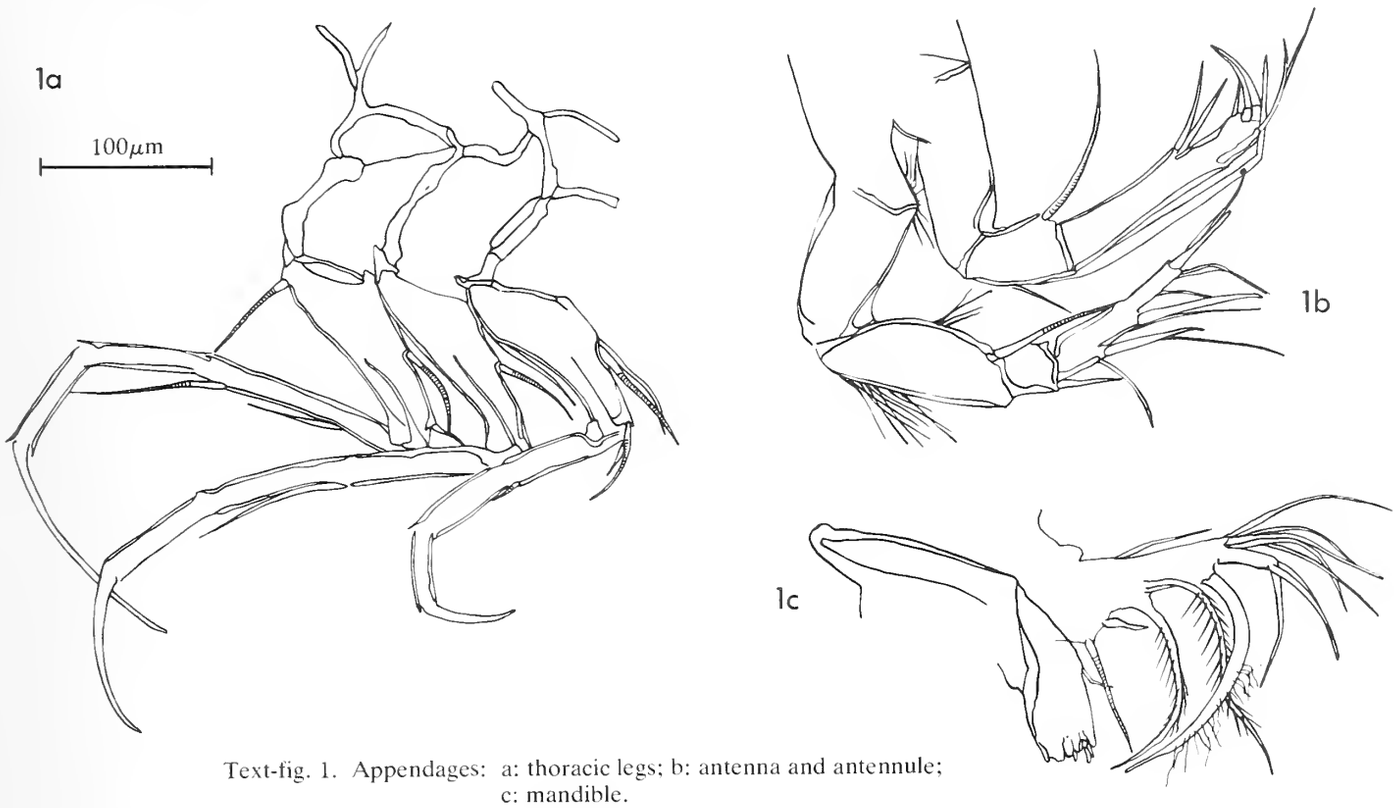
Remarks: In my original description (1969), on the basis of carapace morphology (in particular muscle scars), I felt *Waiparacythereis* to be closely related to *Urocythereis*. This decision is confirmed by the soft parts illustrated herein.

Explanation of Plate 9, 44

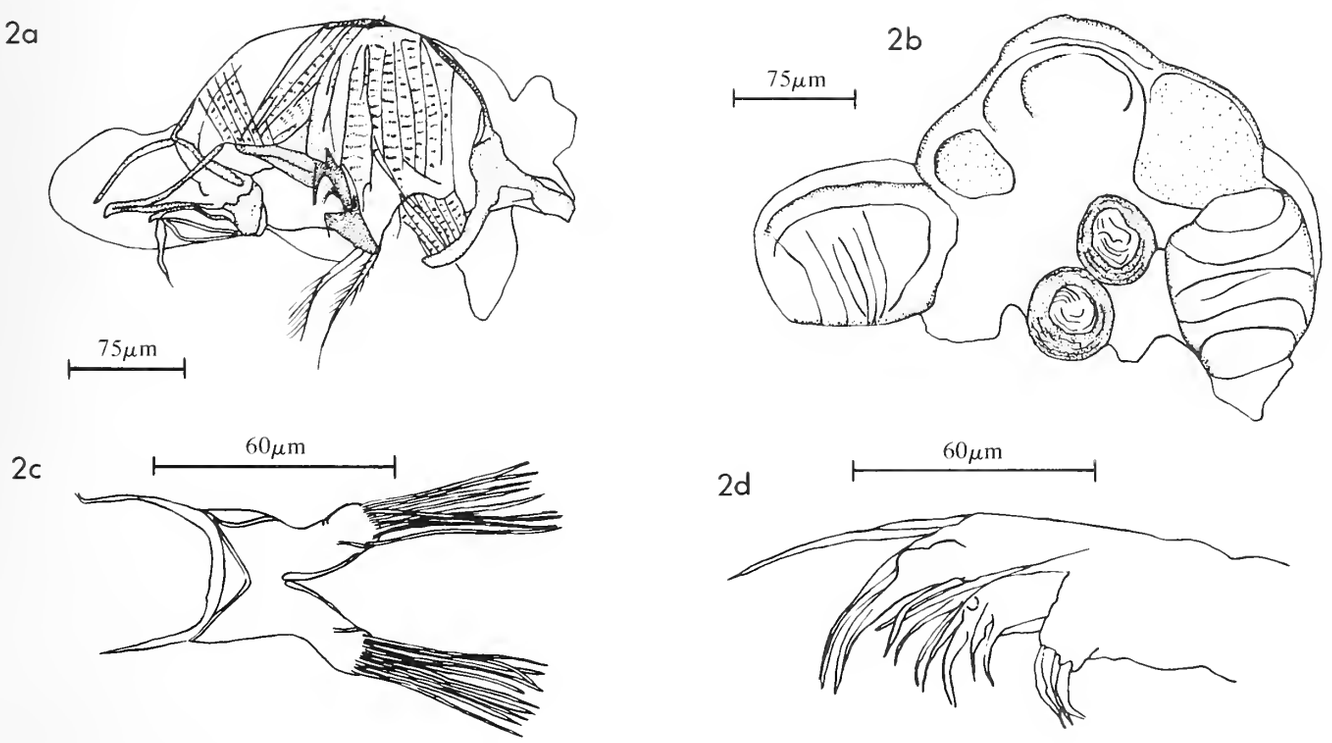
Fig. 1, LV, int. lat. (**UCF 1337.4,** 880 μm long); fig. 2, LV, int. musc. sc. and ant. hinge (**UCF 1337.4,** 880 μm long); fig. 3, LV, int. post. hinge (**UCF 1337.4,** 880 μm long).
Scale A (200 μm long; x 95), fig. 1; scale B (100 μm long; x 215), fig. 2; scale C (50 μm long; x 515), fig. 3.


1a
2a
1b
2b
A
B


1a
2
1b
3
A
C



Text-fig. 1. Appendages: a: thoracic legs; b: antenna and antennule; c: mandible.



Text-fig. 2. Appendages: a: copulatory apparatus; b: posterior of body; c: brush organ; d: maxilla

Stereo-Atlas of Ostracod Shells 9 (8) 47-50 **(1982)**
595.337.14 (118.21) (567 : 161.043.36) 551.35

ON *ACANTHOCYTHEREIS DOHUKENSIS* KHALAF sp. nov.

by Saleh K. Khalaf
(University of Hull, England and *University of Mosul, Iraq)*

Acanthocythereis dohukensis sp. nov.

Holotype: University of Hull Coll. no. HU.275.T.1, ♂ car.
[Paratype: **HU.275.T.2.5**].

Type locality: Dohuk anticline, Southern limb, 10 km NE Dohuk City N. Iraq. Lower Fars Formation bed no. 12; lat. 36° 54′ N, long. 43° 01′ E; M Miocene.

Derivation of name: From Dohuk City, which gave its name to the Dohuk anticline, where the species was found.

Figured Specimens: University of Hull Coll. nos. **HU.275.T.1** (♂ car.; LV: Pl. **9,** 48, fig. 1; Pl. **9,** 50, figs. 2, 3), **HU.275.T.2** (♀ car.: Pl. **9,** 48, fig. 2; Pl. **9,** 50, fig. 1).

Diagnosis: Species of *Acanthocythereis* with well-developed surface reticulation and strong blunt spines. Carapace subrectangular with dorsal and ventral margins converging slightly posteriorly.

Explanation of Plate 9, 48

Fig. 1, ♂ car., ext. lt. lat. (holotype, **HU.275.T.1,** 836 μm long); fig. 2, ♀ car. ext. rt. lat. (paratype, **HU.275.T.2,** 788 μm long).
Scale A (200 μm, x 115), fig. 1; scale B (200 μm; x 122), fig. 2.

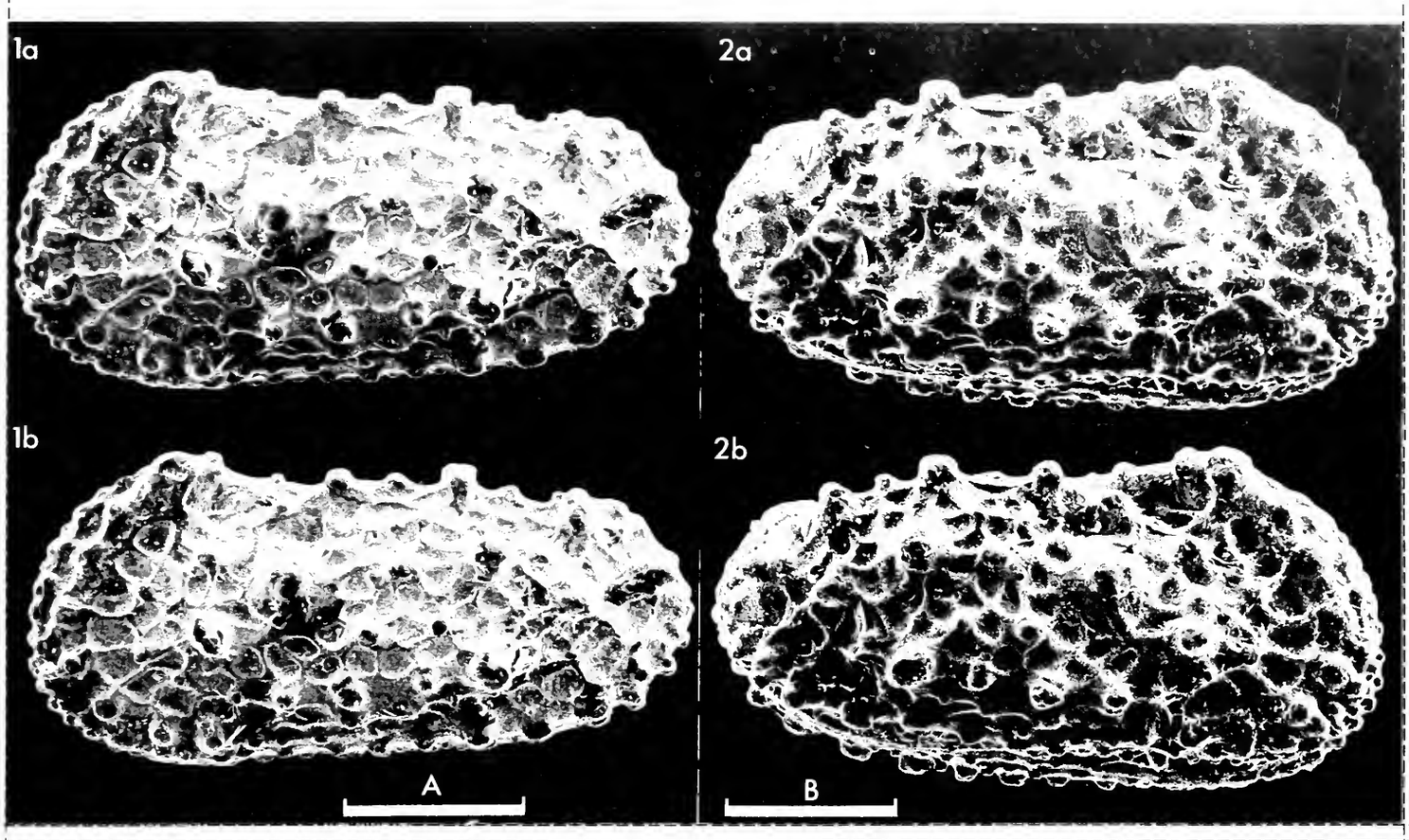
Remarks: Anterior margin broadly rounded with row of small tubercles, posterior end subtriangular. Sexual dimorphism marked, presumed males are longer and less wide than the females.

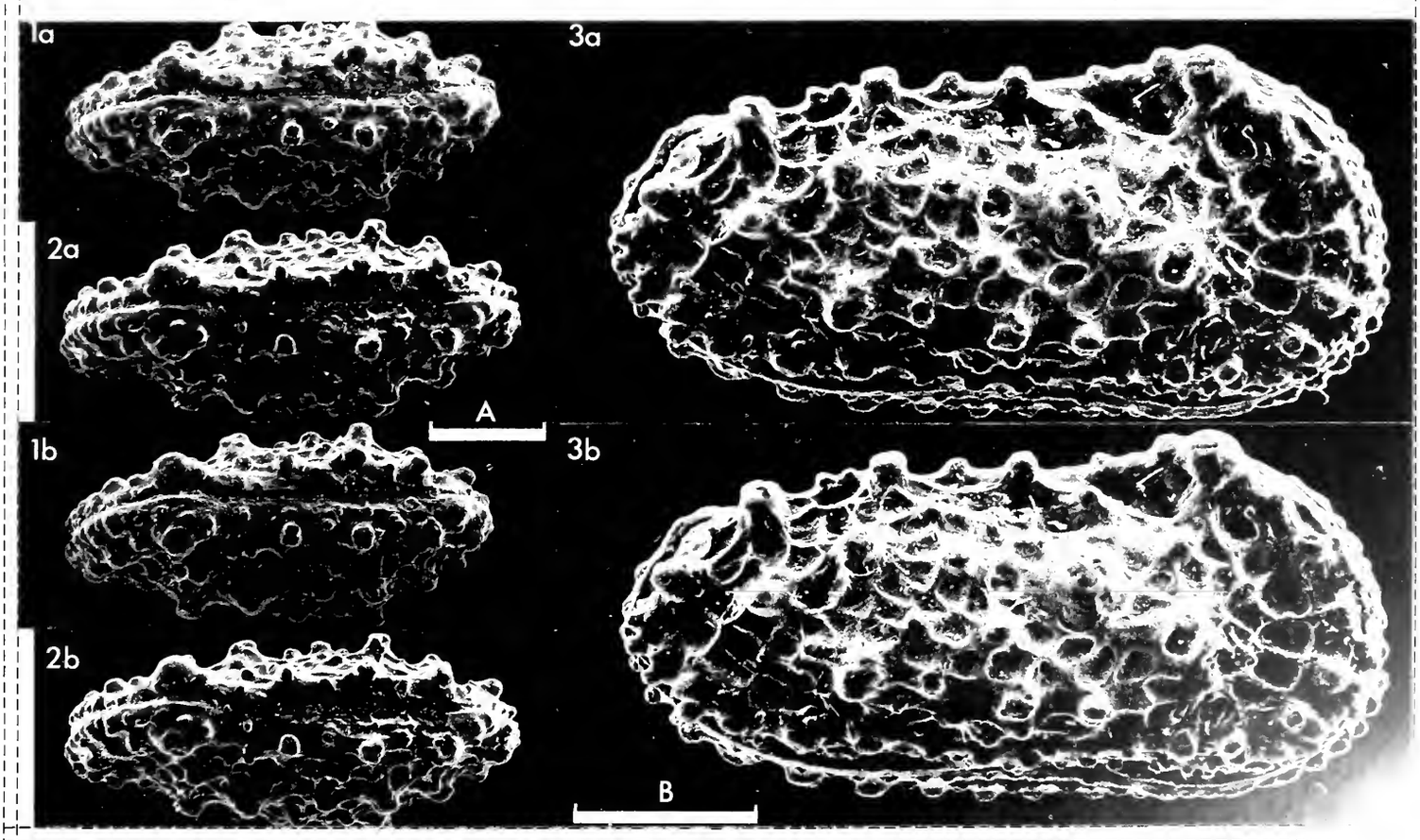
Acanthocythereis hystrix differs in having much blunter spines and the posterior margin is more subtriangular. *Trachyleberis (Acanthocythereis) procapsus* Siddiqui, 1971 is narrower and less high, has a slightly concave ventral margin anteroventrally and differs in detail of reticulation.

Distribution: This species has been found in the L Fars Formation of the Bashiqa, Sheikhan and Dohuk sections, N Iraq.

Explanation of Plate 9, 50

Fig. 1, ♀ car., dors. (paratype, **HU.275.T.2,** 788 μm long); figs. 2, 3, ♂ car. (holotype, **HU.275.T.1,** 836 μm long): fig. 2, dors.; fig. 3, ext. rt. lat.
Scale A (200 μm; x 79), figs. 1, 2; scale B (200 μm; x 133) fig. 3.


1a
2a
1b
2b
A
B


1a
3a
2a
A
1b
3b
2b
B

595.337.14 (118.21) (567 : 161.043.36) 551.35

ON *ACTINOCYTHEREIS IRAQENSIS* KHALAF sp. nov.

by Saleh K. Khalaf
(University of Hull, England and *University of Mosul, Iraq)*

Actinocythereis iraqensis sp. nov.

Holotype: University of Hull Coll. no. **HU.275.T.6,** ♂ car.
[Paratypes: **HU.275.T.7-12**].

Type locality: Sheikh Ibrahim anticline, southern limb, NW Iraq, 45 km west of Mosul. Lower Fars Formation bed No. 50 M; lat. 36° 18′ N, long. 42° 39′ E; Miocene.

Derivation of name: From its abundant occurrence in the M Miocene of Iraq.

Figured specimens: University of Hull Coll. nos. **HU.275.T.6** (♂ car.; RV: Pl. **9,** 52, fig. 1), **HU.275.T.7** (♀ car.; RV: Pl. **9,** 52, fig. 2; Pl. **9,** 54, fig. 2), **HU.275.T.8** (♀ LV, int. lat.: Pl. **9,** 54, fig. 1).

Diagnosis: A thick-shelled species of *Actinocythereis,* subrectangular in lateral view with greatest height at the eye tubercle; surface strongly ornamented with different sized tubercles, well developed marginal rim with small tubercles.

Explanation of Plate 9, 52

Fig. 1, ♂ car., ext. rt. lat. (holotype, **HU.275.T.6,** 1092 μm long); fig. 2, ♀ car., ext. rt. lat. (paratype, **HU.275.T.7,** 916 μm long). Scale A (200 μm; x 90), fig. 1; scale B (200 μm; x 103), fig. 2.

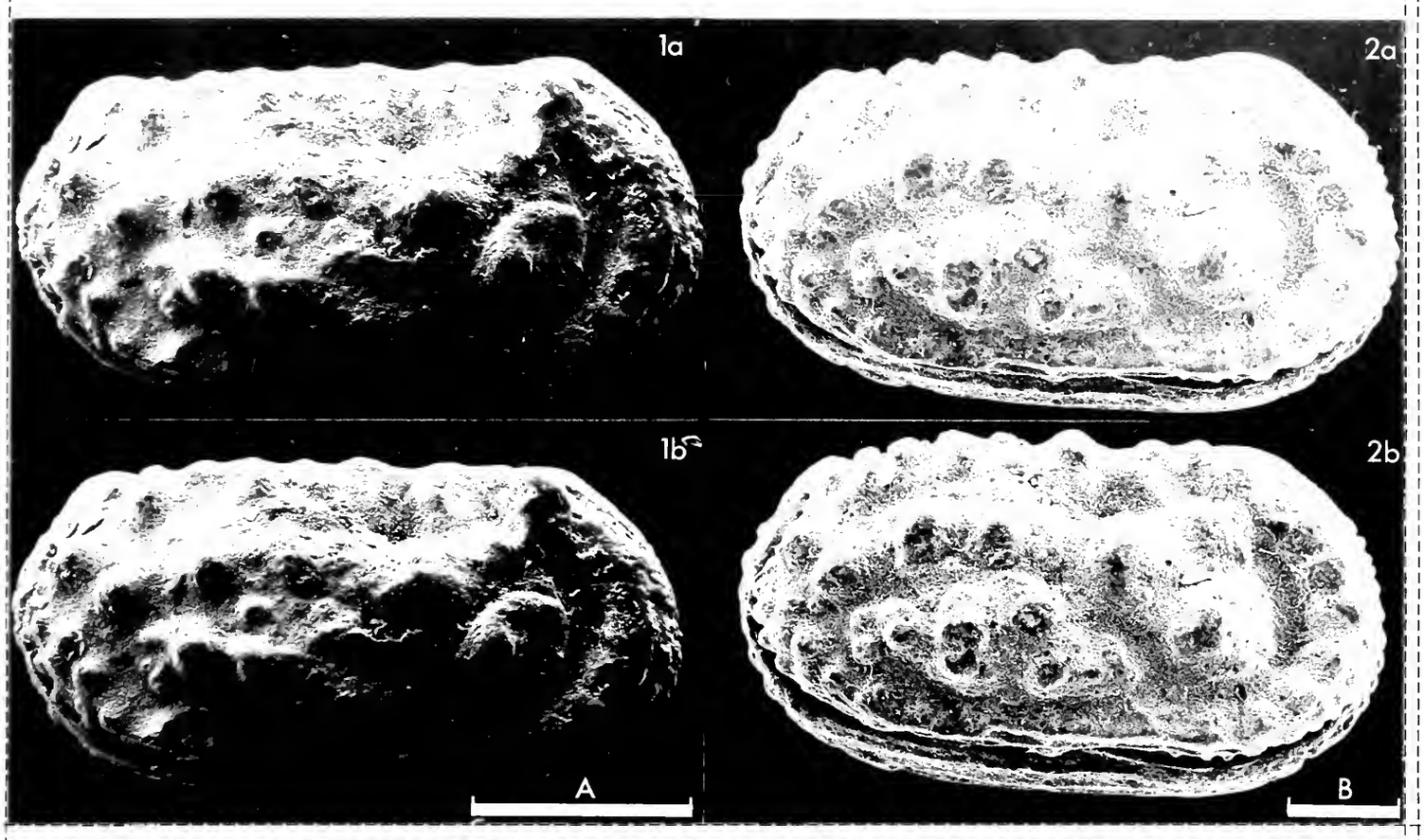
Remarks: The present species shows affinities with *Actinocythereis tumefacentis* (Lyubimova and Guha, 1960) but differs in that the ventral margin of the latter species is strongly concave medially and the posterior end is more rounded than that of *A. iraqensis*. This species differs from *Trachyleberis (Actinocythereis) birmanica pyawbwe* Gramann, 1975 which is narrower posteriorly.

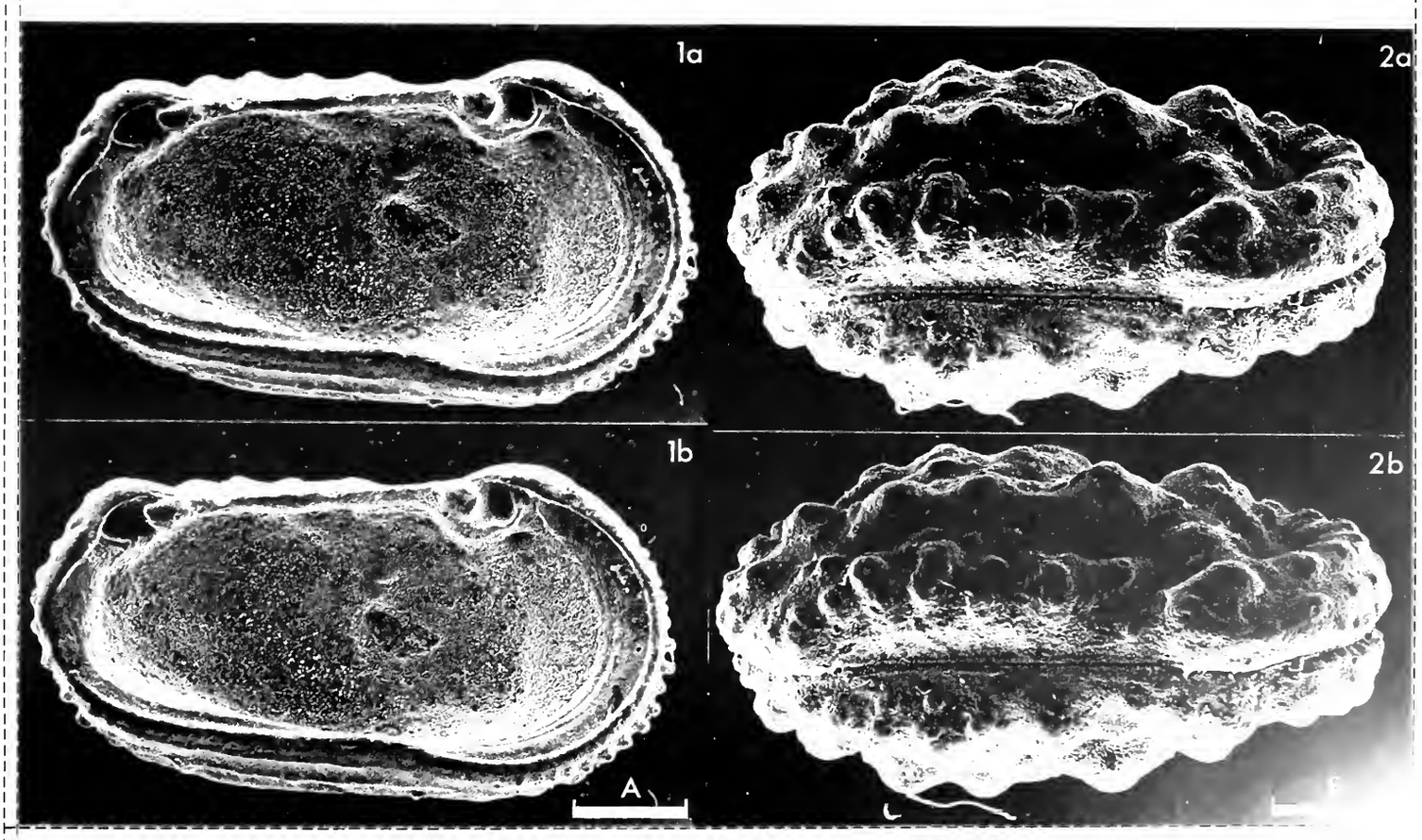
This species occurs abundantly and shows many of the features typical of *Actinocythereis*. The dorsal and ventral margins are nearly straight and subparallel, the anterior end rounded with distinct marginal rim and the posterior end is subrectangular. The surface is coarsely ornamented with different sized tubercles, and the distinctive median row starts anteroventrally and runs in a dorsally convex arch to the posteroventral part of the valve. This is a very common species in the M Miocene of Iraq and is often accompanied by *Hermanites transversicostata* and *Chrysocythere naqibi*.

Distribution: *A. iraqensis* is very common in the M Miocene of Iraq in the Bashiqa, Sheikhan, Dohuk, Sheikh Ibrahim, Tel. Hajer, Kirkuk and Hamerin sections.

Explanation of Plate 9, 54

Fig. 1, ♀ LV, int. lat. (paratype, **HU.275.T.8,** 956 μm long); fig. 2, ♂ car., ext. dors. (paratype, **HU.275.T.7,** 916 μm long). Scale A (200 μm; x 102), fig. 1; scale B (200 μm; x 100), fig. 2.


1a
2a
1b
2b
A
B


1a
2a
1b
2b
A

Stereo-Atlas of Ostracod Shells 9 (10) 55-58 **(1982)**
595.337.14 (118.21) (567 : 161.043.36) 551.35

ON *CHRYSOCYTHERE NAQIBI* KHALAF sp. nov.

by Saleh K. Khalaf
(University of Hull, England and *University of Mosul, Iraq)*

Chrysocythere naqibi sp. nov.

Holotype: University of Hull Coll. no. **HU.275.T.13,** ♀ car.
[Paratype: **HU.275.T.14,** ♂car.].

Type locality: Sheikh Ibrahim anticline, southern limb, NW Iraq, 145km west of Mosul, Lower Fars Formation, bed no. 50; M Miocene: lat. 36° 18′ N, long. 42° 39′ E.

Derivation of name: In the honour of the late Iraqi geologist, Khorshid M. Al. Naqib, in recognition of his extensive contributions to the Iraqi geology.

Figured specimens: University of Hull Coll. nos. **HU.275.T.13** (holotype, ♀ car.: Pl. **9,** 56, fig. 1; Pl. **9,** 58, fig. 1), **HU.275.T.14** (♂car.: Pl. **9,** 56, fig. 2; Pl. **9,** 58, fig. 2).

Diagnosis: Three longitudinal ridges, the dorsal and median are connected by a short curved transverse ridge at about one third length from anterior end. The median ridge runs in an elegantly curved, convex upward arc from middle of anterior margin towards middle of posterior end. The rest of the surface is ornamented with thick, short transverse ridges.

Explanation of Plate 9, 56

Fig. 1, ♀car., ext. rt. lat. (holotype, **HU.275.T.13,** 904μm long); fig. 2, ♂car., ext. lt. lat. (paratype, **HU.275.T.14,** 992μm long). Scale A (200μm; x 105), fig. 1; scale B (200μm; x 93), fig. 2.

Remarks: The species is characterised by a distinctive type of ornamentation, the thick transverse ridges which connect the median and ventral ridges forming distinctive reticulae; two rounded reticulae alternate in the anterior part of the median ridge. Sexual dimorphism is very marked, the presumed male being longer and narrower than the female.

The present species differs from *Chrysocythere paradisus* Doruk, 1973, which is more elongate and differs in details of the reticulum.

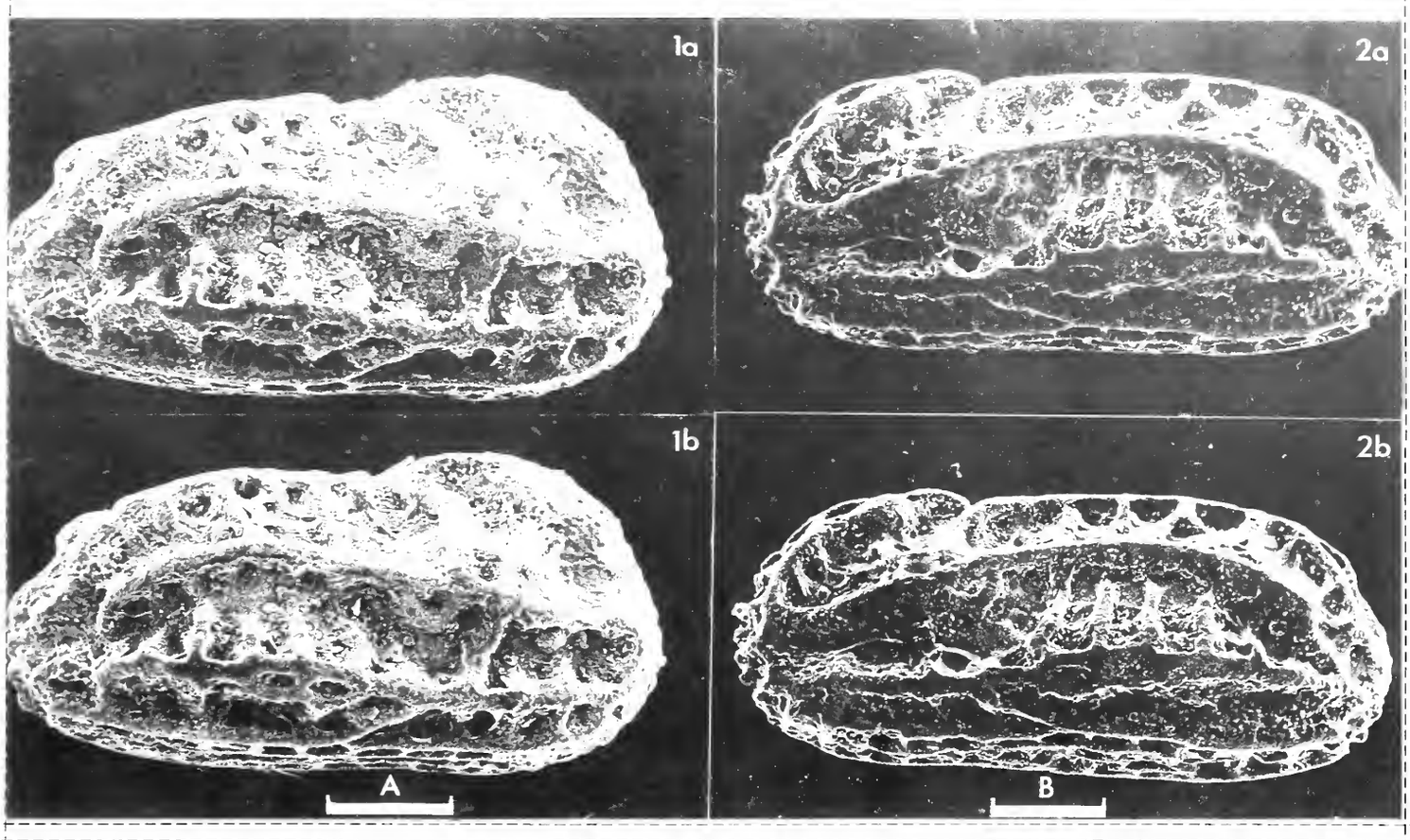
C. naqibi is more elongate than *C. cataphracta*, Ruggieri, 1962, and differs in detail of the reticulation.

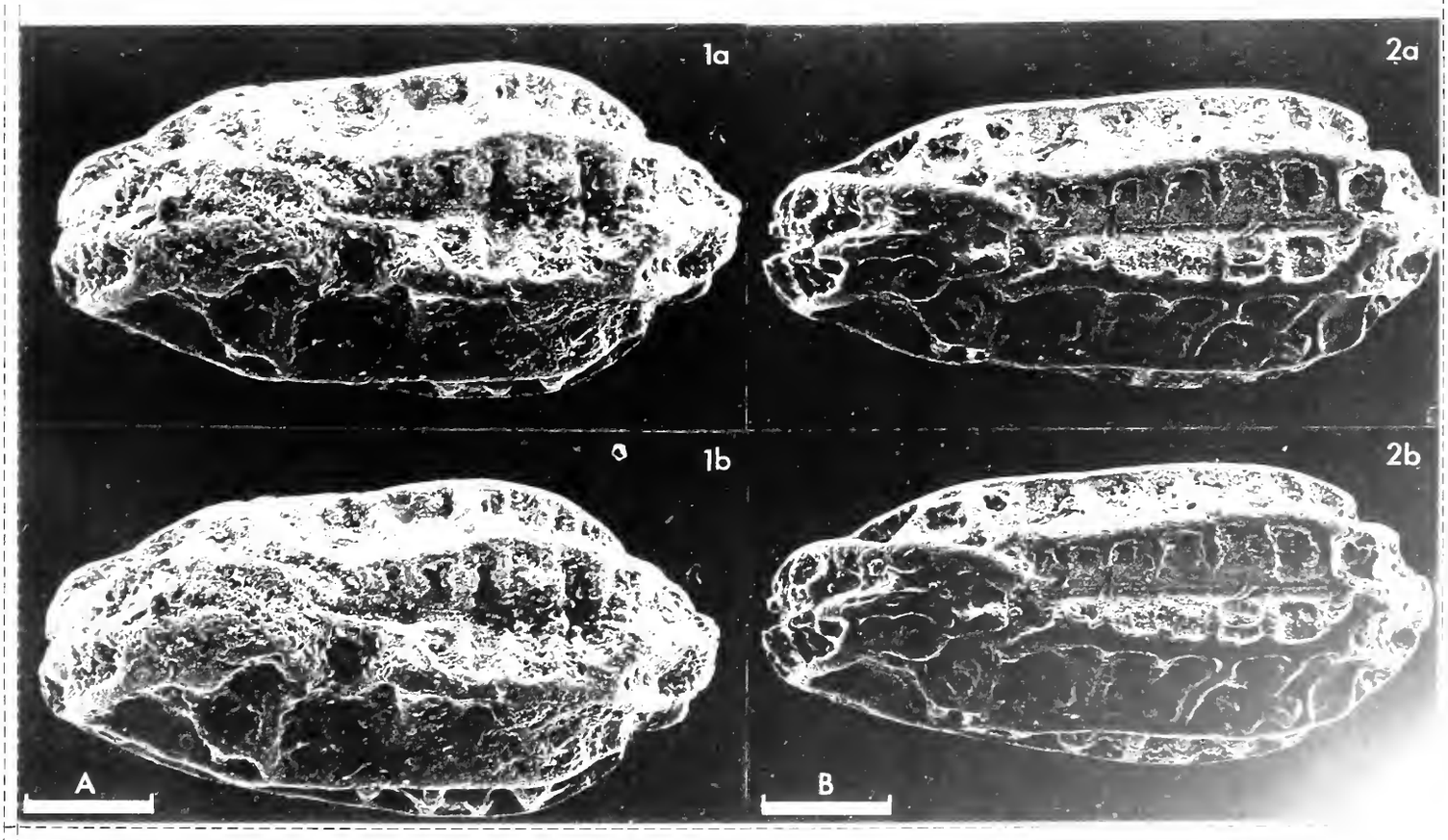
The new subspecies of *C. cataphracta* described from the M Miocene in the Mersin of Turkey by Bassiouni, 1980 shows some similarity in ornamentation but the present species differs in the development of an additional longitudinal ridge below the ventral ridge which is joined to the latter and follows a curved path in the posterior two-thirds of the shell.

Distribution: *C. naqibi* occurs in the M Miocene sections of Sheikh Ibrahim anticline, NW Iraq where it is associated with *Hermanites transversicostata* Khalaf *(Stereo-Atlas of Ostracod Shells,* **9,** 59-62, 1982) and *Actinocythereis iraqensis* Khalaf (*Ibid.,* 51-54).

Explanation of Plate 9, 58

Fig. 1, ♀ car., ext. dors. (holotype, **HU.275.T.13,** 904μm long); fig. 2, ♂car., ext. dors. (paratype, **HU.275.T.14,** 992μm long). Scale A (200μm; x109), fig. 1; scale B (200μm; x 102), fig. 2.


1a
2a
1b
2b
A
B


1a
2a
1b
2b
A
B

Stereo-Atlas of Ostracod Shells 9 (11) 59-62 **(1982)**
595.337.14 (118.21) (567 : 161.043.36) 551.35

ON *HERMANITES TRANSVERSICOSTATA* KHALAF sp. nov.

by Saleh K. Khalaf
(University of Hull, England and *University of Mosul, Iraq)*

Hermanites transversicostata sp. nov.

Holotype: University of Hull Coll. no. **HU.275.T.15,** ♂ car.
[Paratype: **HU.275.T.16-25**].

Type locality: Sheikhan anticline, northern limb, 27 km NE of Mosul City, Northern Iraq, Lower Fars Formation, bed no. 10; M Miocene; lat. 36° 42′ N, long. 43° 25′ E.

Derivation of name: From the characteristic vertical transverse rib running from the posterodorsal margin about one-eighth the length from the posterior margin and sub-parallel to the latter.

Figured specimens: University of Hull Coll. nos. **HU.275.T.16** (♀ car.: Pl. **9,** 60, fig. 1; Pl. **9,** 62, fig. 1), **HU.275.T.15** (holotype, ♂ car.: Pl. **9,** 60, fig. 2; Pl. **9,** 62, fig. 2).

Diagnosis: A species of *Hermanites* with curved dorsal ridge joined posteriorly with a short, vertical transverse ridge and ending in a small node. Surface ornamented with strong reticulation, well-developed eye tubercle and steeply inclined posterior margin.

Explanation of Plate 9, 60

Fig. 1, ♀ car., ext. lt. lat. (paratype, **HU.275.T.16,** 824 μm long), fig. 2, ♂ car., ext. lt. lat. (holotype, **HU.275.T.15,** 992 μm long). Scale A (200 μm; x 107), fig. 1; scale B (200 μm; x 94), fig. 2.

Remarks: Surface ornamented with well-developed reticulae, dorsal ridge joined by the short posteriorly transverse ridge. Anterior end of the ventral ridge is joined to the sub-central tubercle by a short curved ridge. The reticulae at the anterior margin are sub-rectangular.

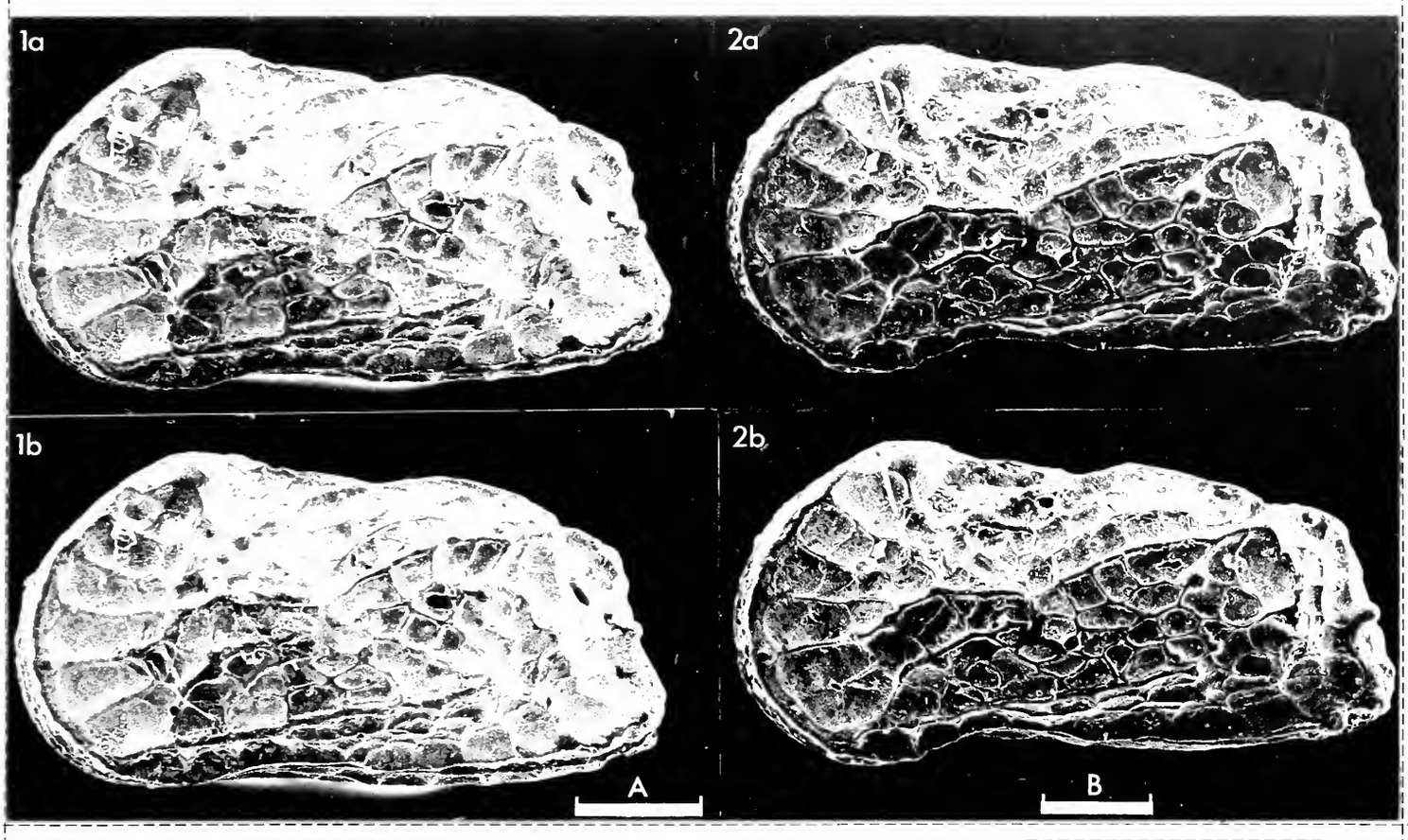
Hermanites transversicostata shows affinities with *Hermanites crucens* Siddiqui 1971 but, in the present species, the dorsal margin is humped and the ventral margin strongly concave just behind the anterior margin. Furthermore, the posterior margin has the steeply inclined, short posteriorly transverse ridge not seen in Siddiqui's species. *H. transversicostata* differs from *H.* sp. *cf. H. paijenborchianus* (Khosla 1978) in the shape of the posterior margin which is slightly concave posterodorsally and more rounded posteroventrally; the present species is also much longer.

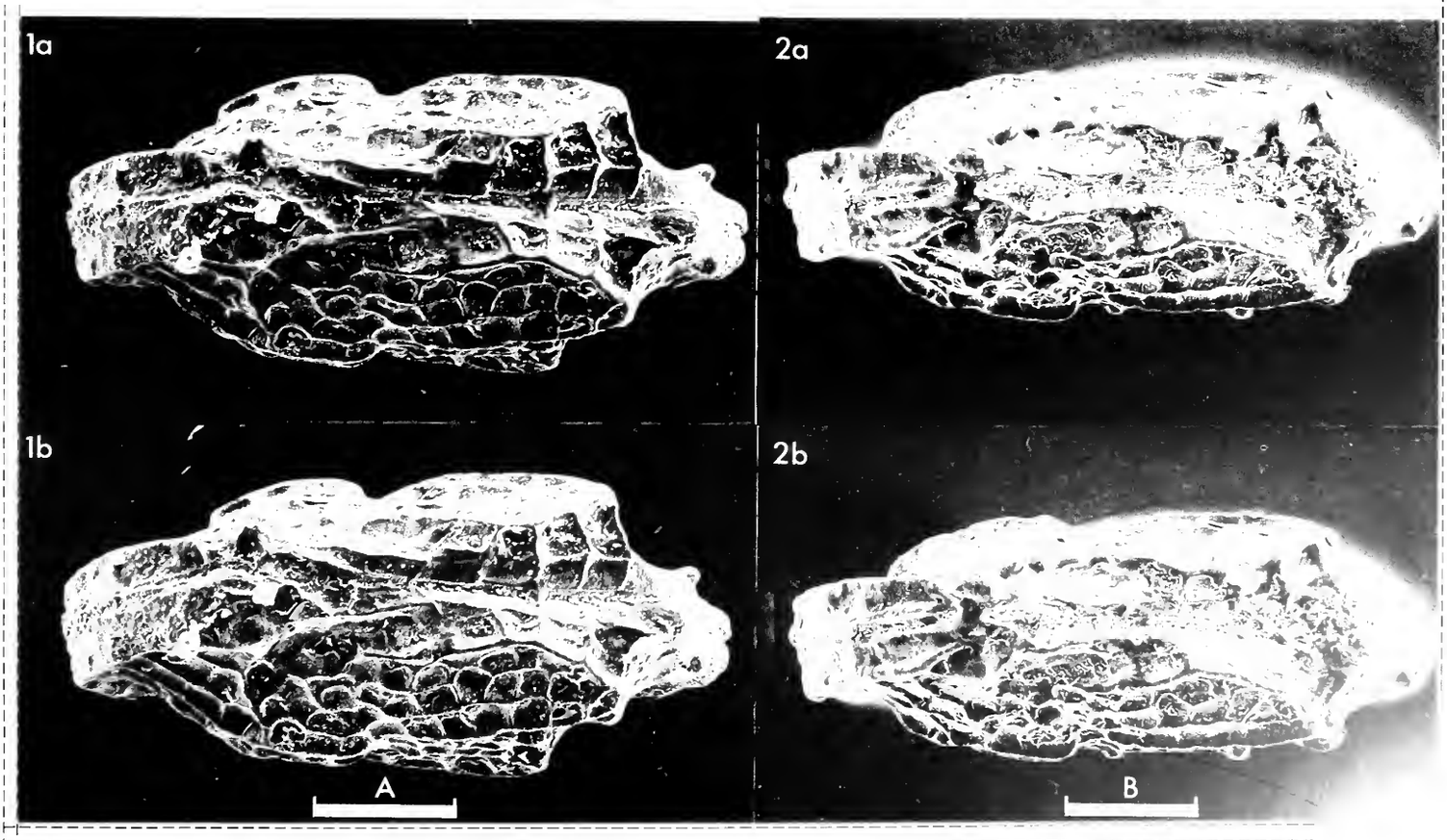
Distribution: The species is found in the M Miocene of Tel. Hajer, Sheikh Ibrahim, Sheikhan, Bashiqa, Kirkuk and Hamerin sections.

It is very abundant and associated species are *A. dohukensis, A. iraqensis* and *Chrysocythere naqibi* (see Khalaf, *Stereo-Atlas of Ostracod Shells*, **9,** 47-50, 51-54, 55-58, 1981).

Explanation of Plate 9, 62

Fig. 1, ♀ car., ext. dors. (paratype, **HU.275.T.16,** 824 μm long), fig. 2, ♂ car., ext. dors. (holotype, **HU.275.T.15,** 992 μm long). Scale A (200 μm; x 114), fig. 1; scale B (200 μm; x 86), fig. 2.


1a
2a
1b
2b
A
B


1a
2a
1b
2b
A
B

Stereo-Atlas of Ostracod Shells 9 (12) 63-68 **(1982)**
595.337.14 (119.9) (261.26 : 161.009.58) : 551.351

ON *PROPONTOCYPRIS TRIGONELLA* (SARS)

by John Athersuch and John E. Whittaker
(B.P. Research Centre, Sunbury and *British Museum (Natural History), London)*

Genus *Propontocypris* Sylvester-Bradley, 1947

Type species: (designated by Sylvester-Bradley, 1947) *Pontocypris trigonella* Sars, 1866

1866 *Pontocypris* gen. nov. G. O. Sars *(pars)*, *Forh.VidenskSelsk.Krist.*, **1865,** 13.
1912 *Pontocypris* Sars; G. W. Müller, *Tierreich*, **31,** 109.
1923 *Pontocypris* Sars; G. O. Sars, *An Account of the Crustacea of Norway, vol. 9, Ostracoda*, Bergen Museum, parts 3, 4, 47.
1947 *Propontocypris* gen. nov. P. C. Sylvester-Bradley, *Ann.Mag.nat.Hist.*, ser. 11. **13,** 193.
1969 *Propontocypris (Propontocypris)* Sylvester-Bradley; R. F. Maddocks, *Smithson.Contrib.Zool.*, **7,** 11.
1969 *Propontocypris (Ekpontocypris)* subgen. nov. R. F. Maddocks, *ibid.*, 27.
1969 *Propontocypris (Schedopontocypris)* subgen. nov. R. F. Maddocks, *ibid.*, 37.

Diagnosis: Carapace trigonal, longest ventrally, moderately compressed; RV larger than LV; marginal flanges weak or absent; marginal serrations absent. Greatest height and inflation at, or slightly in front of midpoint. Adductor muscle-scars form cluster of five arranged in three near-horizontal rows or in a

---

Explanation of Plate 9, 64

Fig. 1, ♂ LV, ext. lat. (**1982.25,** 620 μm long); fig. 2, ♀ LV, ext. lat. (**1982.26,** 650 μm long); fig. 3, ♀ car., ext. dors. (**1982.27,** 650 μm long). Scale A (200 μm; x 89), figs 1-3.

Diagnosis (contd.): rosette. First antenna 8-jointed; male legs symmetrical or nearly so. Terminal pectinate seta of third leg exceeded in length by one other seta. Subterminally, furca bears two stout setae of medium length flanked by two unequal, slender setae. Testes positioned posteriorly, curving forward ventrally. S-shaped ovaries positioned posteriorly. Large eyes present.

Remarks: Maddocks (1969) recognised three subgenera of *Propontocypris* based mainly on carapace curvature and details of the muscle-scar patterns. The appendages of all 3 subgenera would appear to be very similar, except for the fine structure of the genetalia.

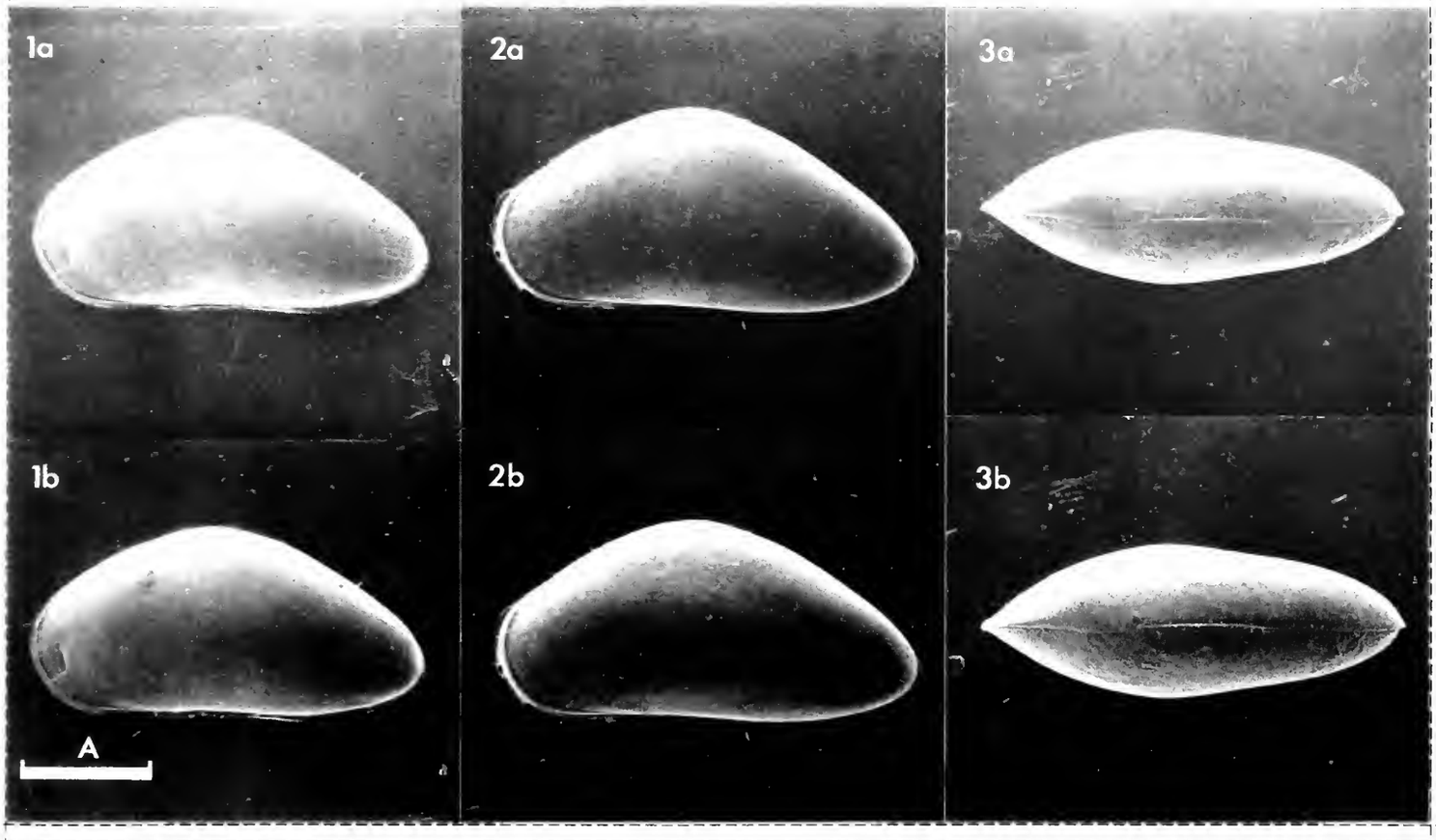
In our opinion the criteria used to separate these taxa are rather subjective and we prefer not to subdivide the genus.

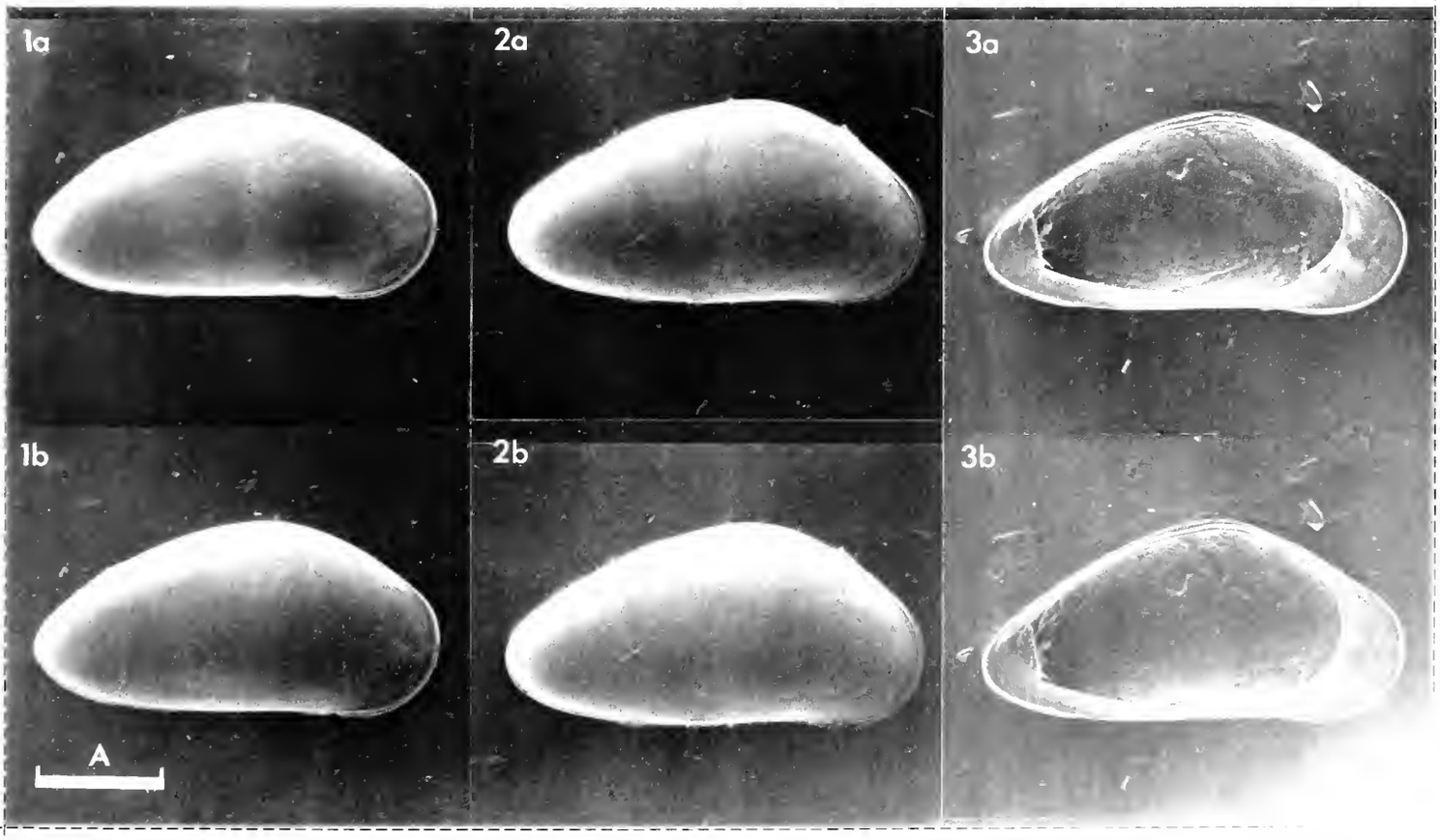
Propontocypris may be distinguished from *Pontocypris* both on carapace and appendage characters. *Pontocypris* has five muscle-scars arranged in three horizontal rows, two in each of the lower rows, and one centrally above; the greatest inflation and height coincide well in front of the midpoint and the carapace is strongly elongated posteriorly; the dorsal margin is angular and the posteroventral margin of the RV is serrate. Maddocks (1969) records a number of striking differences between the soft parts of these two genera. *Pontocypris* is blind, has a 7-jointed first antenna and differs from *Propontocypris* in the detailed anatomy of the legs, the furcal setae and the genetalia.

The diagnosis of the appendages of *Propontocypris* is based on our own observations together with those recorded by Sars, 1923 and Maddocks, 1969.

Explanation of Plate 9, 66

Fig. 1, ♂ RV, ext. lat. (**1982.28,** 630 μm long); fig. 2, ♀ RV, ext. lat. (**1982.29,** 650 μm); fig. 3, ♀ LV, int. lat. (**1982.30,** 650 μm long). Scale A (200 μm; x 89), figs. 1-3.


1a
2a
3a
1b
2b
3b
A


1a
2a
3a
1b
2b
3b
A

Propontocypris trigonella (Sars, 1866)

1866 *Potocypris trigonella* sp. nov. *(sic)* G. O. Sars, *Forh.VidenskSelsk.Krist.*, **1865,** 16 *(lapsus calami)*.
1868 *Pontocypris trigonella* Sars; G. S. Brady, *Trans.Linn.Soc.Lond.*, **26,** 387, pl. 25, figs. 31-34; pl. 38, fig. 3.
1923 *Pontocypris trigonella* Sars; G. O. Sars, *An Account of the Crustacea of Norway, vol. 9, Ostracoda*, Bergen Museum, 48, pl. 20.
1947 *Propontocypris trigonella* (Sars); P. C. Sylvester-Bradley, *Ann.Mag.nat.Hist.*, ser. 11, **13,** 193 (new combination).
1957 *Pontocypris trigonella* Sars; A. P. C. de Vos, *Arch.Zool. exp.gén.*, **95,** 10, pl. 4, figs. 1a-i.

Type specimens: Several dried and unrecognisable specimens remain in the Sars Collection, Zoological Museum, Oslo, Norway, no. F 1532. However, Sars' (1923) illustrations and description adequately define this species.

Type locality: Risör, Norway, approx. lat. 58° 44′ N, 09° 15′ E. Recent.

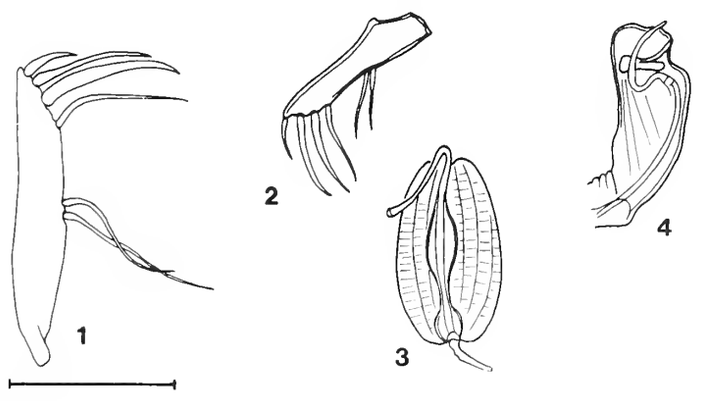
Diagnosis: Carapace of medium size (c. 0.60-0.70 mm), dimorphic. Greatest height slightly anterior to midpoint, with broadly rounded dorsal margin; more tapered posteriorly; rounded at both ends. In dorsal view, carapace moderately inflated, widest in front of midpoint, rounded posteriorly, acutely tapering anteriorly. Slight marginal flange anteriorly, and to a lesser extent, posteriorly, in both valves. Male carapace proportionately more elongate than female. Furcae and male copulatory appendages distinctive.

Figured specimens: Brit.Mus.(Nat.Hist.) nos. **1982.25** (♂LV: Pl. **9,** 64, fig. 1), **1982.26** (♀LV: Pl. **9,** 64, fig. 2), **1982.27** (♀car.: Pl. **9,** 64, fig. 3), **1982.28** (♂RV: Pl. **9,** 66, fig. 1), **1982.29** (♀RV: Pl. **9,** 66, fig. 2), **1982.30** (♀ LV: Pl. **9,** 66, fig. 3), **1982.31** (♂appendages: Text-fig. 1). **1982.25, 26, 28-30,** ex Norman Collection no. **1911.11.8.M3019** from "oyster ooze" at Stranraer, SW Scotland (lat. 54° 55′ N, long. 05° 00′ W); **1982.27** ex Scott Collection from Loch Fyne, W Scotland, collected 1896; lat. 56° 00′ N, long. 05° 25′ W. **1982.31,** ex Norman Collection, no. **1900.3.6.150,** from Firth of Clyde, W Scotland, collected July 1885.

Remarks: For a comparison with *Propontocypris pirifera* (G. W. Müller) with which *P. trigonella* has frequently been confused, see Athersuch & Whittaker, *(Stereo-Atlas of Ostracod Shells,* **9,** 69-76, 1982).

No males could be found from our British collections which were well enough preserved to allow dissection of the male copulatory appendages, although one specimen still had a furca intact (Text-fig. 1). Text-fig. 4 is therefore redrawn after Sars (1923, pl. 20) for comparison of the copulatory appendages with those of *P. pirifera* (see Athersuch & Whittaker, *op.cit.*, text-figs. 2, 4, 6); a further drawing, again after Sars (1923), is finally appended (Text-fig. 2) in order to compare the furca of the Norwegian specimen with that from Britain.

Distribution: A NW European species; records from Scandinavian and British coasts can be confirmed; Mediterranean records need to be checked. Found in small numbers on a variety of substrates in sub-littoral, marine environments.



Text-figs. 1-4, Appendages of *P. trigonella*, ♂♂. Fig. 1, Furca (**1982.31**). Firth of Clyde, Scotland; figs. 2-4, Furca, Zenker's organ and copulatory appendage, Norway (after Sars, 1923, pl. 20). Scale 100 μm; fig. 1. Figs. 2-4, no scale.

595.337.14 (119.9) (261.26 + 261.27 + 261.28 + 262 : 161.014.40) : 551.313.1 + 551.351

ON *PROPONTOCYPRIS PIRIFERA* (G. W. MÜLLER)

by John Athersuch and John E. Whittaker
(B.P. Research Centre, Sunbury and *British Museum (Natural History), London)*

Propontocypris pirifera (G. W. Müller, 1894)

1889 *Pontocypris trigonella* Sars; G. S. Brady & A. M. Norman *(pars)*, *Scient.Trans.R.Dubl.Soc.*, **4**, 109, pl. 22, figs. 18-25; pl. 23, fig. 6 *(non P. trigonella* Sars, 1866).
1894 *Pontocypris pirifera* sp. nov. G. W. Müller, *Fauna Flora Golf.Neapel*, **21**, 247, pl. 10, figs. 1-3, 18-20, 22-24; pl. 38, fig. 52.
1957 *Pontocypris pirifera* Müller; A. P. C. de Vos, *Arch.Zool.exp.gén.*, **95**, 12, pl. 5, figs. 1a-1.
1969 *Propontocypris pirifera* (Müller); I. Yassini, *Bull.Inst.Geol.Bassin Aquitaine*, **7**, 29, pl. 15.
1969 *Propontocypris (Ekpontocypris) pirifera* (Müller); R. F. Maddocks, *Smithson.Contrib.Zool.*, **7**, 27 (no description).
1976 *Propontocypris pirifera* (Müller); G. Bonaduce, G. Ciampo & M. Masoli, *Pubbl.Staz.zool.Napoli*, **40**, pl. 9, figs. 5, 6 (no description).

Type specimens: Several specimens remain in the Müller Collection at the Zoologischen Institut, Greifswald and at the Institut für Spezielle Zoologie und Zoologisches Museum der Humboldt Universität zu Berlin, E Germany.

Type locality: Bay of Naples, W Italy, approx. lat. 40° 50′ N, long. 14° 15′ E. Recent.

Explanation of Plate 9, 70

Fig. 1, ♂car., ext. rt. lat. (**1982.11,** 970 μm long); fig. 2, ♀car., ext. rt. lat. (**1982.12,** 830 μm long); fig. 3, ♀car., ext. lt. lat. (**1982.13,** 790 μm long).
Scale A (250 μm; x 65), figs. 1-3.

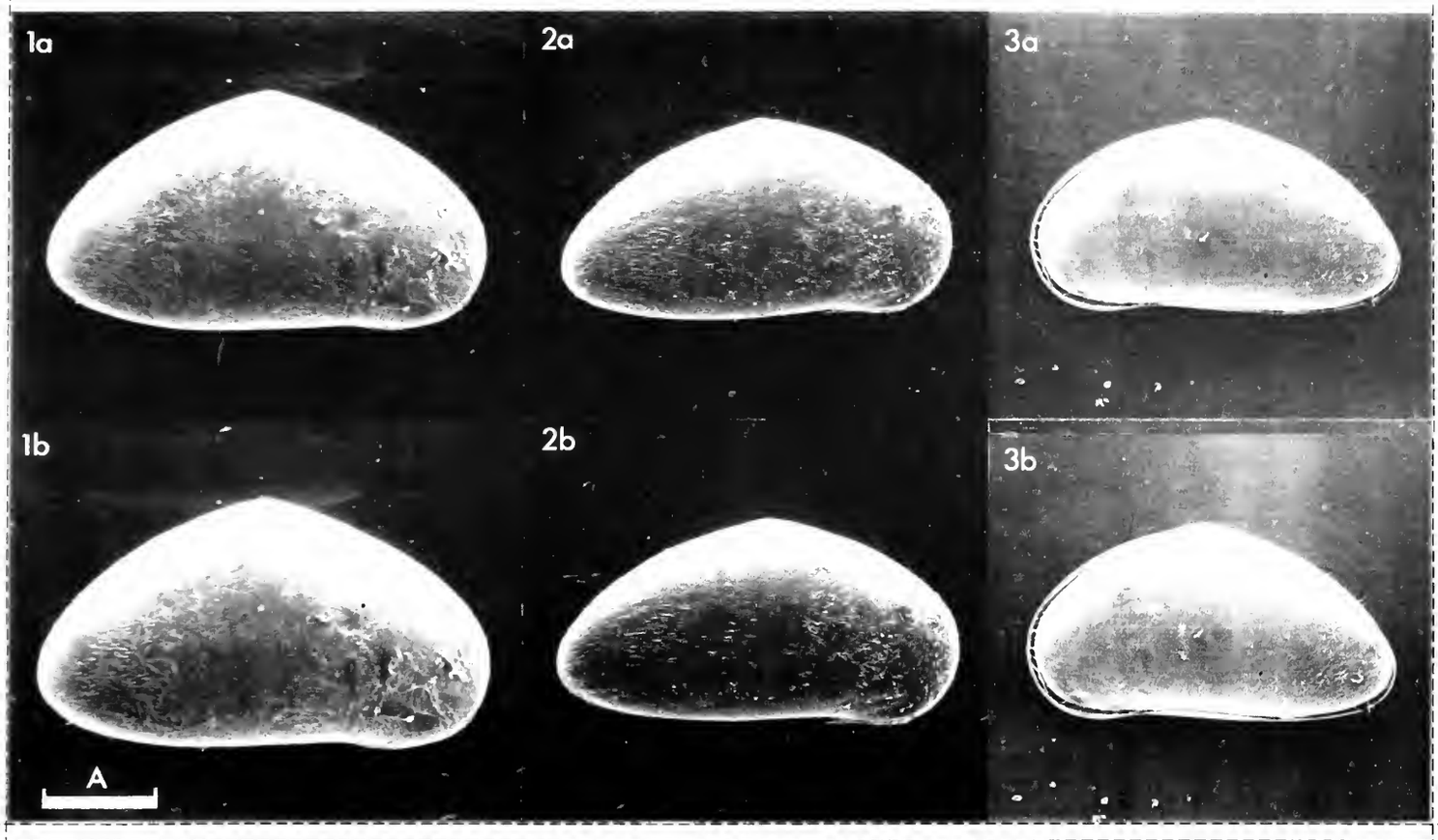
Diagnosis: Carapace large, strongly dimorphic. Greatest height at midpoint; marked by distinct cardinal angle, particularly in RV. Anterior margin broadly rounded, posterior slightly more tapered. In dorsal view, carapace moderately and evenly inflated, widest at midpoint, rounded at both ends. Marginal rim anteriorly in RV. Males more trigonal than females. Furcae and male copulatory appendages distinctive.

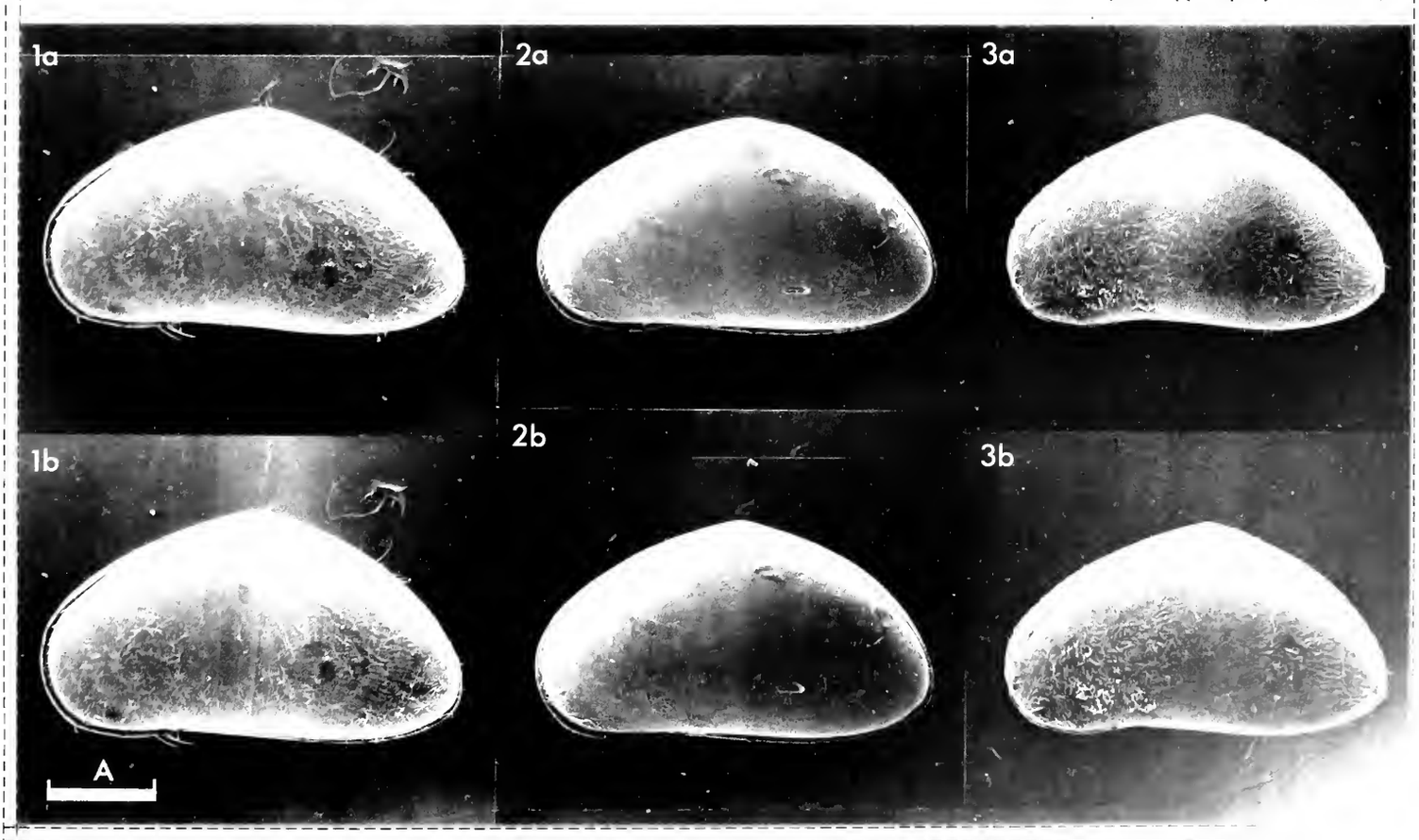
Figured specimens: Brit. Mus. (Nat. Hist.) nos. **1982.11** (♂car.: Pl. **9,** 70, fig. 1; Pl. **9,** 74, fig. 3), **1982.12** (♀car.: Pl. **9,** 70, fig. 2), **1982.13** (♀car.: Pl. **9,** 70, fig. 3), **1982.14** (♂car.: Pl. **9,** 72, fig. 1), **1982.15** (♀car.: Pl. **9,** 72, fig. 2), **1982.16** (♂LV: Pl. **9,** 72, fig. 3), **1982.17** (A-1 car.: Pl. **9,** 74, fig. 1), **1982.18** (♀car.: Pl. **9,** 74, fig. 2), **1982.19** (♂RV and appendages: Pl. **9,** 76, fig. 1), **1982.20** (♀RV: Pl. **9,** 76, fig. 2), **1982.21** (♂RV: Pl. **9,** 76, fig. 3), **1982.22** (♂appendages: Text-figs. 1, 2), **1982.23** (♂appendages: Text-figs. 3, 4), **1982.24** (♂appendages: Text-figs. 5, 6).

1982.11-14, 17-19, 21, 22, were collected alive by J. E. Whittaker from various stations in East Fleet, Dorset, S England (lat. 50° 36′ N, long. 02° 28′ W), between August 1968 and August 1969, on *Zostera,* green-algae and *Laminaria* holdfasts; salinities varied between 31 and 35°/oo, and water temperature 7 to 21°C, depth 0.5-3m. **1982.16, 20, 23,** are from Cyprus and were collected alive by J. Athersuch, in November 1973. **1982.16, 23,** are from S of Cape Greco (lat. 33° 55′ N, long. 34° 10′ E), water temperature 21.5°C, depth 8m on algae; **1982.20** is from Famagusta Bay (lat. 35° 07′ N, long. 33° 56′ E), water temperature 22°C, depth 15m, in fine sand. Salinity in both localities c. 39°/oo. **1982.15, 24** (ex slide no. **1972.3.2.2**) collected by K. G. McKenzie from Lago del Fusaro, near Naples, W Italy; approx. lat. 41° 40′ N, long. 14° 04′ E.

Explanation of Plate 9, 72

Fig. 1, ♂car., ext. lt. lat. (**1982.14,** 940 μm long); fig. 2, ♂car., ext. lt. lat. (**1982.15,** 860 μm long); fig. 3, ♂car., ext. lt. lat. (**1982.16,** 830 μm long).
Scale A (250 μm; x 65), figs. 1-3.


1a
2a
3a
1b
2b
3b
A


1a
2a
3a
1b
2b
3b
A

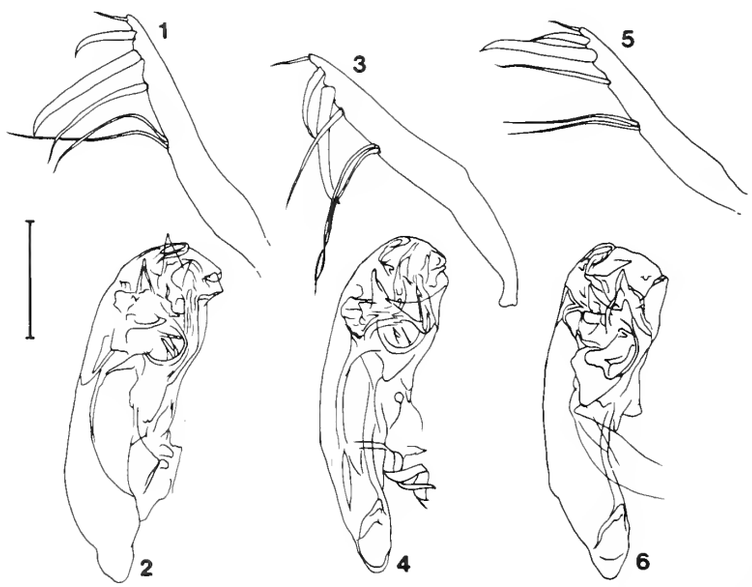
Remarks: *P. pirifera* differs in size and shape from *P. trigonella* (Sars) with which it has often been confused. *P. trigonella* is smaller and more elongate, particularly posteriorly, than *P. pirifera*. Furthermore, the greatest height and inflation is further forward in *P. trigonella*. The furcae and copulatory appendages of each species are also very distinctive (cf. Text-figs. 1-6, herein and *Stereo-Atlas of Ostracod Shells*, **9,** 63-68, text-figs. 1, 2, 4). Both species are sexually dimorphic but in *P. pirifera* this is very pronounced; the male is the larger of the two sexes in *P. pirifera*, but the smaller dimorph in *P. trigonella*. The male carapaces from the population in The Fleet are considerably larger (c. 0.95mm) than those from the Mediterranean (c. 0.85mm), whilst their copulatory appendages are virtually identical in size. The pear-shaped sperm heads (after which the species is named) are well seen in Pl. **9,** 76, fig. 1.

Distribution: Associated with algae and sea-grass in brackish and marine littoral and shallow sublittoral environments. Some records from Scotland, S England, the Atlantic coast of France and the Mediterranean, as far E as Cyprus, can be confirmed. Many specimens from British coasts, examined by the authors in the Brit. Mus. (Nat. Hist.) and Hancock Museum, Newcastle-upon-Tyne, purporting to be *P. trigonella*, are referable to *P. pirifera*. Our investigations show that *P. pirifera* has a wider geographical distribution outside the Mediterranean than previously recognised.

Explanation of Plate 9, 74

Fig. 1, A-1 car., ext. lt. lat. (**1982.17,** 750 μm long); fig. 2, ♀ car., ext. dors. (**1982.18,** 850 μm long); fig. 3, ♂ car., ext. rt. lat. showing normal pores and setae (**1982.11**).

Scale A (250 μm; x 65), figs. 1, 2; scale B (10 μm; x 1,650), fig. 3.

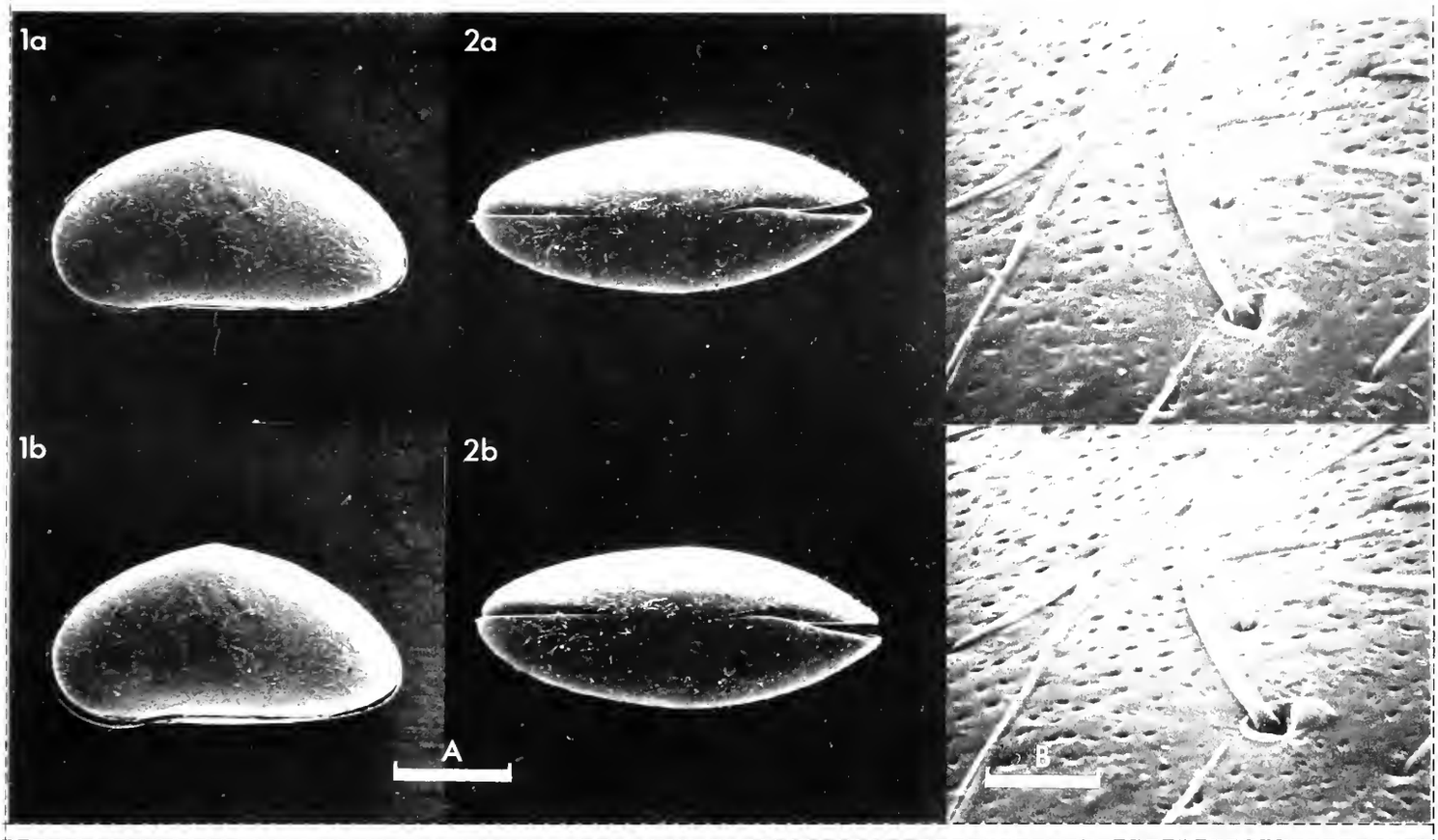


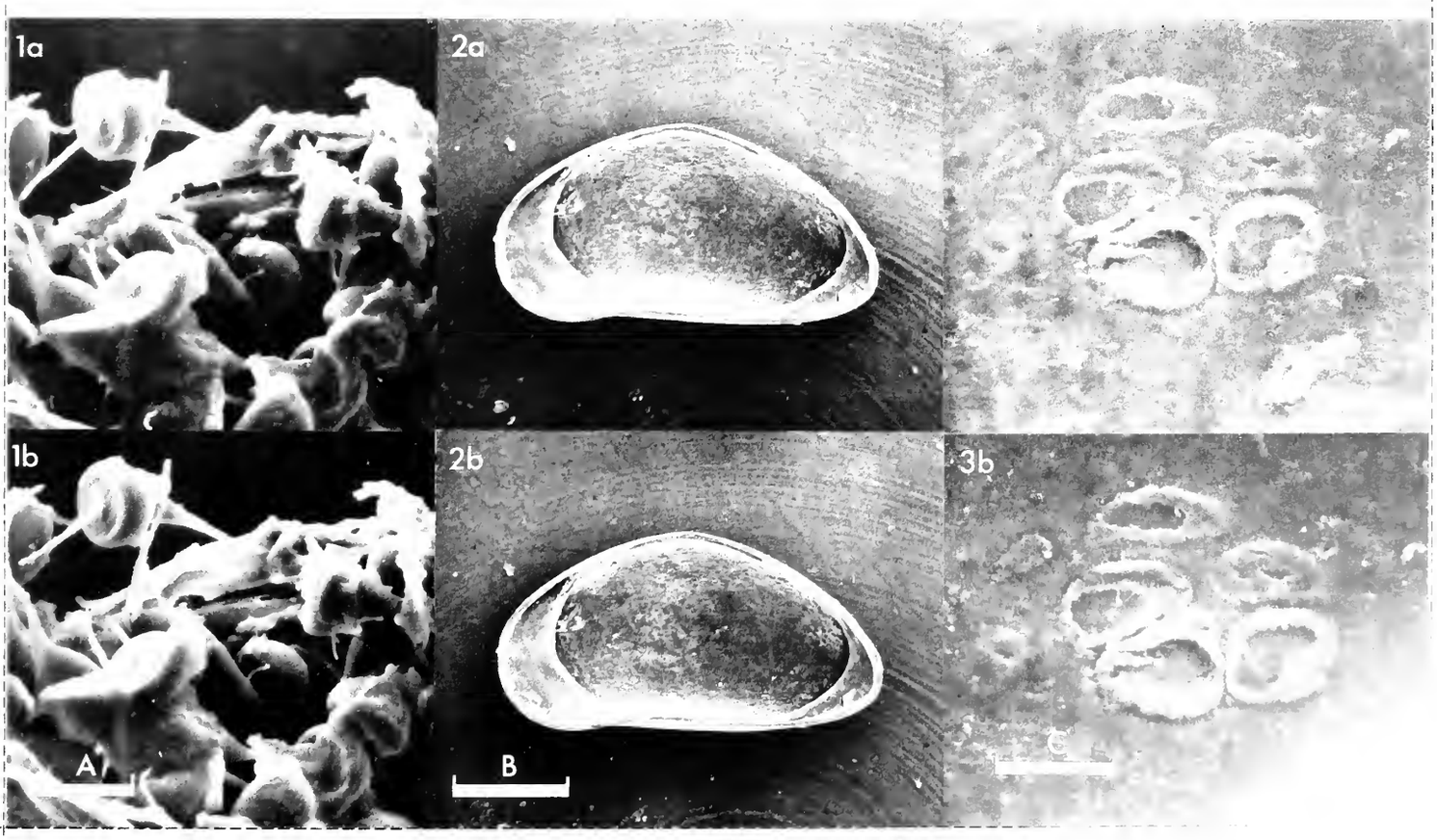
Text-figs. 1-6. Appendages of *P. pirifera*, ♂♂. Figs. 1, 2, Furca and copulatory appendage (**1982.22**), The Fleet, S England; figs. 3, 4, ditto (**1982.23**), Cyprus; figs. 5, 6, ditto (**1982.24**), Naples. Scale 100 μm; x 200. After drawings by D. J. Horne.

Explanation of Plate 9, 76

Fig. 1, ♂, detail of sperm (**1982.19**); fig. 2, ♀ RV, int. lat. (**1982.20,** 770 μm long); fig. 3, ♂ RV, int. lat., musc. sc. (**1982.21**).

Scale A (25 μm; x 520), fig. 1; scale B (250 μm; x 65), fig. 2; scale C (50 μm; x 330), fig. 3.


1a
2a
1b
2b
A
B


1a
2a
1b
2b
3b
A
B

595.337.14 (119.9) (261.26 : 162.005.045 – 161.020.57) : 551.351

ON *BONNYANNELLA ROBERTSONI* (BRADY)

by John Athersuch
(B.P. Research Centre, Sunbury-on-Thames, England)

Genus *BONNYANNELLA* gen nov.

Type species: *Cythere robertsoni* Brady, 1868

Derivation of name: After my wife, Dr Anne Bonny, in appreciation of her encouragement of my ostracod studies.

Diagnosis: Genus of the Loxoconchidae with small (400-500 μm long) reticulate carapace; elongate and quadrate in lateral view; in dorsal view evenly inflated, broadly rounded anteriorly, obtusely tapered posteriorly. Large smooth eye spots. Conjunctive, rimmed normal pores. Hinge gongylodont, median element smooth, posterior tooth of right valve curved around socket. Adductor muscle scars decrease in size from top to bottom; upper three scars elongate, lower scar rounded. Frontal scar U-shaped. Fulcral notch present. Antennula and antenna stout with long strong setae; antennula six-jointed. Respiratory plate of maxillula bears a single reflexed seta. Male copulatory appendage subovate with an inconspicuous rounded terminal lappet; *ductus ejaculatorius* conspicuous and simply coiled.

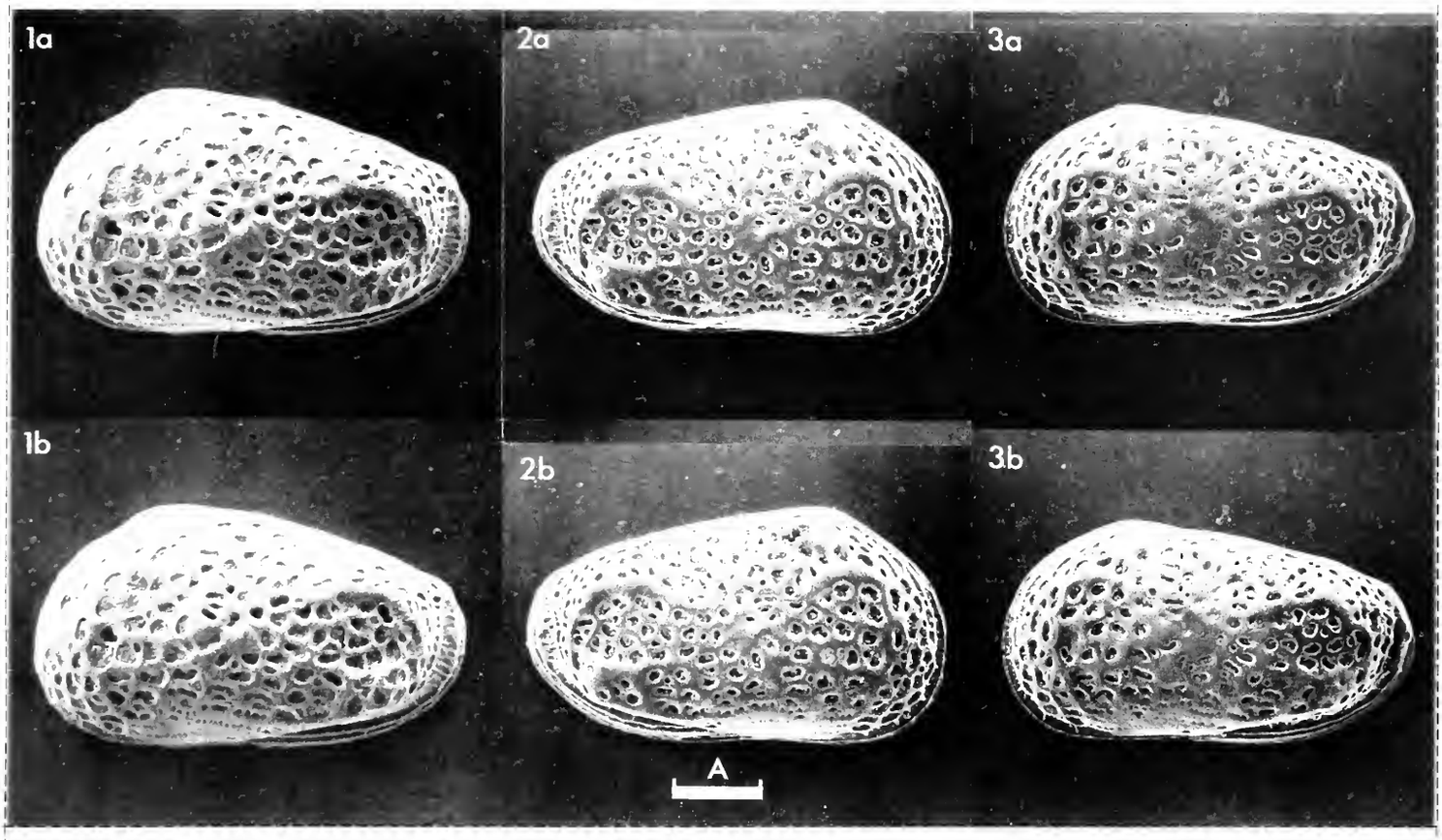
Explanation of Plate 9, 78

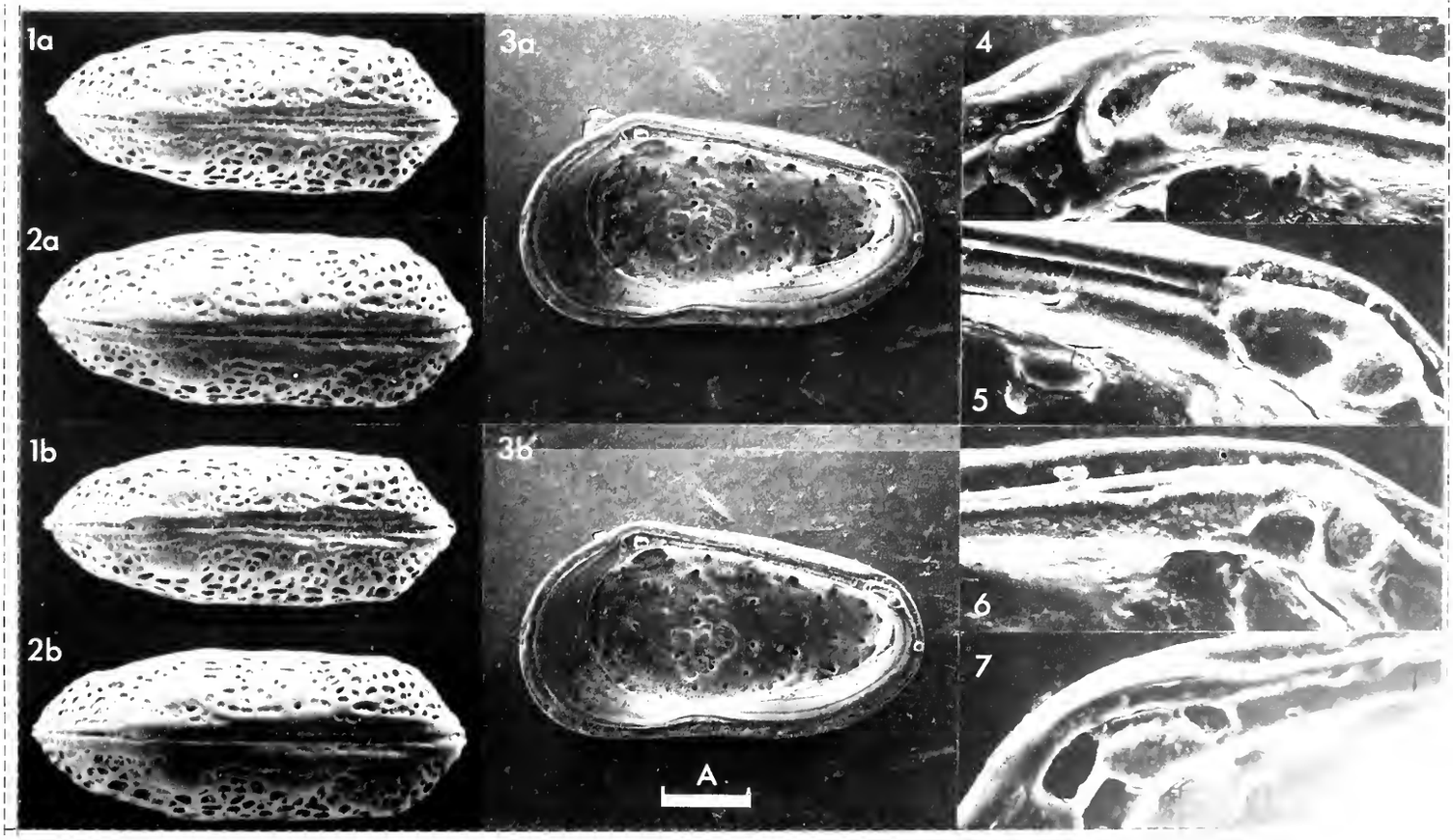
Fig. 1, ♀ LV, ext. lat. (lectotype, Hancock Museum specimen **A,** 480 μm long); fig. 2, ♀ car., ext. rt. lat. (**1982.1,** 460 μm long); fig. 3, ♂ LV, ext. lat. (**1982.2,** 450 μm long).
Scale A (100 μm; x 127), figs. 1-3.

Remarks: *Bonnyannella* differs from *Loxoconcha* in having antennulae with six, instead of five, podomeres and in possessing a fulcral notch and a smooth median hinge element. It may be distinguished from *Cytheromorpha* by its smaller size, by weaker sexual dimorphism, by less pronounced subdivision of the posterior tooth/socket and by a less prominent fulcral notch. The two genera differ in the general form of the copulatory appendages and, as far as I am able to determine, *Cytheromorpha* lacks an aberrant reflexed seta on the respiratory plate of the maxillula. The type species of *Bonnyannella, B. robertsoni,* closely resembles *Sagmatocythere,* typified by *S. napoliana* (Puri) in the general structure of the hinge, except that in *Bonnyannella* the terminal elements are less curved and are not as distinctly lobed as in *Sagmatocythere.* However, the two genera differ in a number of other important respects. Unlike *Sagmatocythere, Bonnyannella* does not have sub-parallel dorsal and ventral margins, a conspicuous marginal flange or pore conuli. In addition, the reticulum of *Bonnyannella* is far less pronounced with a tendency towards celation of the fossae. In contrast to *Sagmatocythere,* neither sex is highly inflated and the male does not have a post-ocular depression. The four distal podomeres of the antennulae in *Bonnyannella* are noticeably stouter and bear relatively much longer and more conspicuous setae than those of *Sagmatocythere.* Furthermore, the distal seta of the second podomere of the third leg is longer than the third podomere, whereas in *Sagmatocythere* it is shorter. The length of this seta has been used in the diagnosis of another loxoconchid genus, *Lindisfarnia* (Horne & Kilenyi, *Stereo-Atlas of Ostracod Shells,* **8,** 107, 1981), and may prove to be of some taxonomic significance. The other appendages of *Bonnyannella* and *Sagmatocythere* are similar.

Explanation of Plate 9, 80

Fig. 1, ♂ car., ext. dors. (Hancock Museum specimen **B,** 450 μm long); fig. 2, ♀ car., ext. dors. (Hancock Museum specimen **C,** 470 μm long); fig. 3, ♂ RV, int. lat. (**1982.3,** 450 μm long); figs. 4, 5, ♂ RV, int. lat. terminal hinge elements (**1982.4,** 440 μm long); figs. 6, 7, ♂ LV, int. lat., terminal hinge elements (**1982.4**).
Scale A (100 μm; x 127), figs. 1-3; scale B (25 μm; x 470), figs. 4-7.


1a
2a
3a
1b
2b
3b
A


1a
2a
1b
2b
3a
3b
A
4
5
6
7

Bonnyannella robertsoni (Brady, 1868)

1868 *Cythere Robertsoni* sp. nov. G. S. Brady, *Ann.Mag.nat.Hist., ser. 4,* **2,** 33, pl. 4, figs. 5, 8-10.
1969 *Cytheromorpha robertsoni* (Brady); I. Yassini, *Bull.Inst.Geol.Bassin Aquitaine,* **7,** 111, pl. 18, fig. 3; pl. 19, fig. 20.

Lectotype: In the Brady Collection, Hancock Museum, Newcastle-upon-Tyne, ♀ LV. No registration number, but housed in a separate, labelled slide.

Type locality: Dröbak, Oslofjord, S Norway (lat. 59° 40′ N, long. 10° 40′ E); from 30-35 fathoms (55-65 m); Recent.

Diagnosis: Carapace with numerous small, sub-rounded, deep fossae; evenly inflated with slight posterior protuberances dorsally and ventrally; parallel-sided in dorsal view.

Figured specimens: Hancock Museum specimens (no catalogue numbers, but placed in separate labelled slides) **A** (lectotype, ♀ LV: Pl. **9,** 78, fig. 1), **B** (♂car.: Pl. **9,** 80, fig. 1), **C** (♀ car.: Pl. **9,** 80, fig. 2).

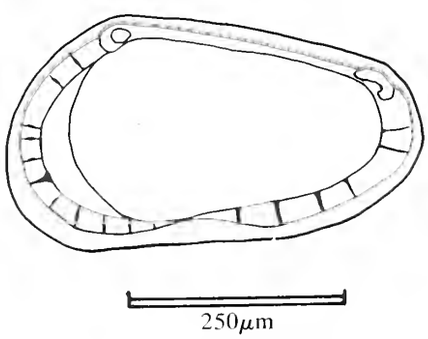
Brit. Mus. (Nat. Hist.) specimen nos. **1982.1** (♀car.: Pl. **9,** 78, fig. 2), **1982.2** (♂car.: Pl. **9,** 78, fig. 3), **1982.3** (♂RV: Pl. **9,** 80, fig. 3; Text-fig. 2). **1982.4** (♂LV & RV: Pl. **9,** 80, figs. 4-7), **1982.5** (♀car. and appendages: Text-figs. 3a-d, 4b-d), **1982.6** (♂car. and appendages: Text-fig. 4a), **1982.127** (♀ RV: Text-fig. 1).

Hancock Museum specimens **A,** from Dröbak, S Norway, **B** and **C** from 4 miles off Hawthorn, Yorkshire, NE England (ex Brady slide N_3), depth 20 fathoms (36 m).

Brit. Mus. (Nat. Hist.) specimens **1982.1** and **1982.2** were collected by T. Scott from the Firth of Clyde, SW Scotland. **1982.3,** from beach sand at Cemaes Bay, Anglesey, N Wales (lat. 53° 25′ N, long. 04° 30′ W), was collected by C. P. Palmer. **1982.4, 6** and **127** were found by the author in beach sand: **1982.4** and **127** at Robin Hood's Bay, Yorkshire, NE England (lat. 54° 25′ N, long. 00° 35′ W) and **1982.6** from Colwyn Bay, N Wales (lat. 53° 17′ N, long. 03° 44′ W). **1982.5,** collected by D. J. Horne, was living amongst *Laminaria* holdfasts at low-water mark, Gore Point, Porlock, SW England (lat. 51° 14′ N, long. 03° 37′ W).

Remarks: *Cytheromorpha exigua* Wouters, 1978 *(Een Systematische, Biostratigrafische en Paleobiologische studie van de Ostracoda uit Miocene afzettingen in Noord-Belgie,* Leuven, **2,** 25, pl. 4, figs. 1a, 1b; pl. 34, figs. 7a, 7b). from the Egedem and Antwerp Sands (Miocene) of Belgium may be referred to *Bonnyannella*. It differs from *B. robertsoni* in dorsal view in being more inflated and rounded posteriorly. It also lacks any posterodorsal protuberance. I am unaware of any other species that may be assigned to *Bonnyannella*.

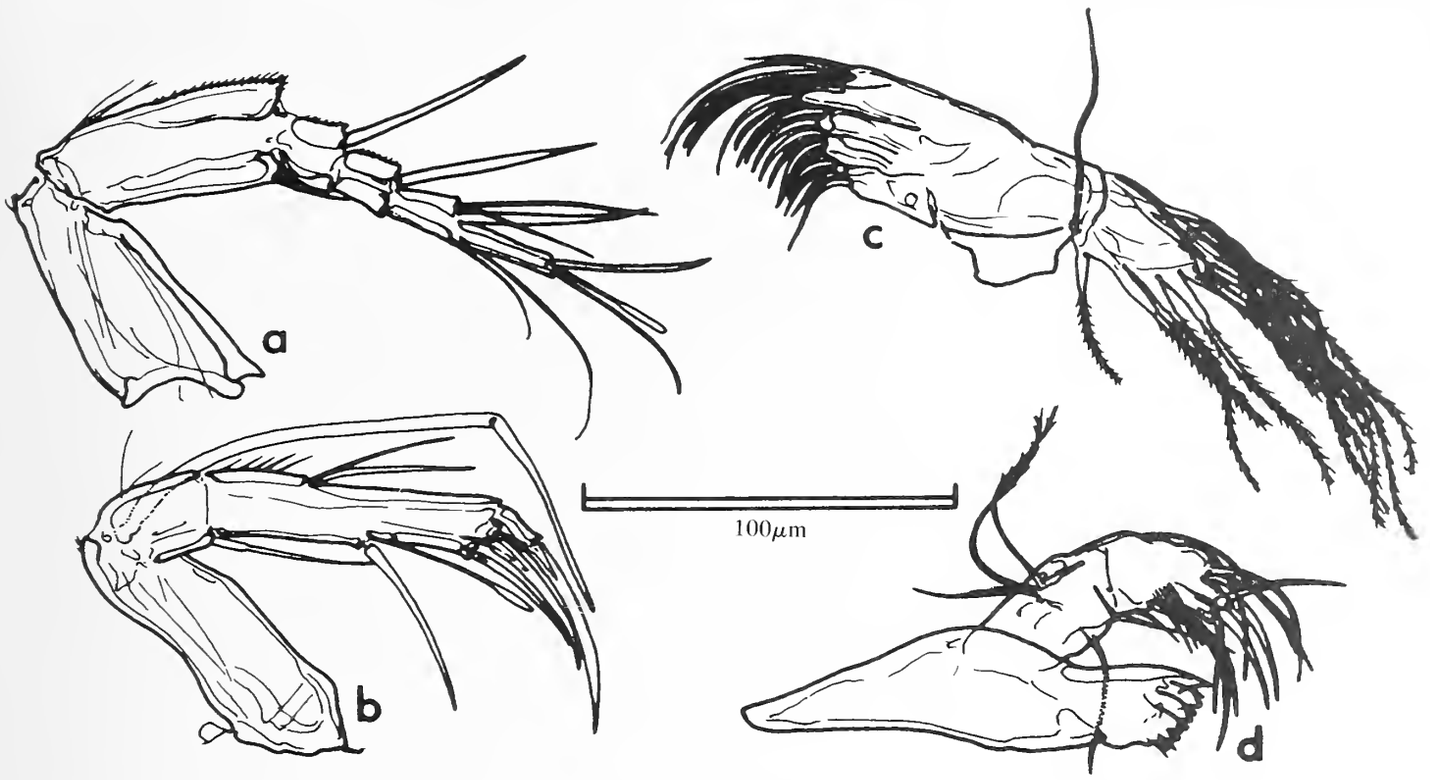
Distribution: Recorded from the lower littoral and sublittoral zones of the coasts of Britain, mainly in the south, to a depth of about 70 m. Known also from the Atlantic coasts of France, Germany, S Norway and the Baltic.



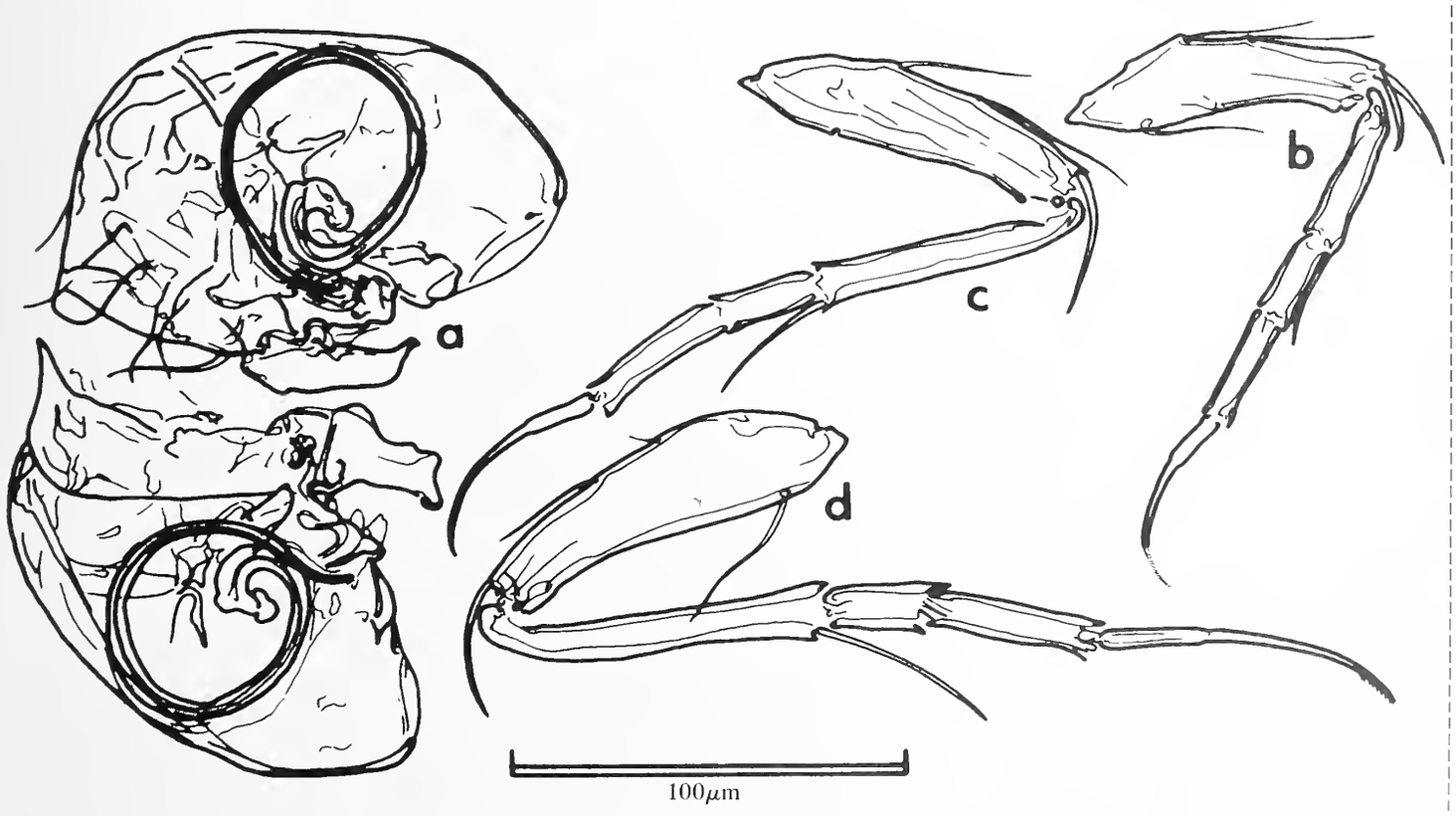
Text-fig. 1

Text-fig. 2

Text-fig. 1, ♂RV int. seen in transmitted light (**1982.127**).
Text-fig. 2, ♂RV int., muscle-scars (**1982.3**).



Text-fig. 3, ♀ appendages: a, antennula; b, antenna; c, maxillula; d, mandible (**1982.5**). (Kindly drawn by D. J. Horne.)



Text-fig. 4, a, ♂ copulatory appendage (**1982.6**); b-d, ♀ legs (**1982.5**). (Kindly drawn by D. J. Horne.)

Stereo-Atlas of Ostracod Shells: Vol. 9, Part 1

CONTENTS

Prepaid annual subscription (valid for Volume 8, 1981)
Individual subscription £20.00 or US $ 50.00 for 2 parts (post free)
Price per Part: £20.00 or US $ 50.00
Institutional subscription £30.00 or US $ 75.00 for 2 parts (post free)
Price per Part: £30.00 or US $ 75.00

Back volumes: Vol. 1 (4 Parts): £20.00; price per Part: £5.00
Vol. 2 (4 Parts): £28.00; price per Part: £7.00
Vol. 3 (2 Parts): £24.00; price per Part: £12.00
Vol. 4 (2 Parts): £30.00; price per Part: £15.00
Vol. 5 (2 Parts): £32.00; price per Part: £16.00
Vol. 6 (2 Parts): £40.00; price per Part: £20.00
Vol. 7 (2 Parts): £40.00; price per Part: £20.00
Vol. 8 (2 Parts): £60.00; price per Part: £30.00

Prices of Numbers as shown in Lists of Contents for each Part
Postage extra in sales of all back Numbers and back Parts
No trade discount is allowed on the subscription rate

Orders should be addressed to: Dr. C. W. Haskins,
Robertson Research International Limited,
'Ty'n-y-Coed', Llanrhos, Llandudno, Gwynedd LL30 1SA.
Cheques should be made payable to Robertson Research Co. (Stereo-Atlas Account)